



.: www.totalrecallvr.com :.

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# Total Recall VR Remote Manager

*User Guide*

**May, 2017**

**Guide Issue 16**

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**Related Documents:**

- [1] Prolancer Pty Ltd, Total Recall VR web site. Available from:  
<http://www.totalrecallvr.com/>.
- [2] Prolancer Pty Ltd, Prolancer web site. Available from:  
<http://www.prolancer.com.au/>.
- [3] Prolancer Pty Ltd, Total Recall VR Overview User Guide, 16.0, May 2017
- [4] Prolancer Pty Ltd, Total Recall VR Deployment User Guide, 16.0, May 2017
- [5] Prolancer Pty Ltd, Total Recall VR Embedded GUI User Guide, 16.0, May 2017
- [6] Prolancer Pty Ltd, Total Recall VR RoD Client User Guide, 16.0, May 2017
- [7] Prolancer Pty Ltd, Total Recall VR SNMP Agent User Guide, 16.0, May 2017

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## 1. Preface

### 1.1. Conventions

Our guides use several conventions to highlight certain words and phrases and draw attention to specific pieces of information.

#### 1.1.1. Notes & Warnings

We use the following visual styles to draw attention to information that might otherwise be overlooked:



Notes are tips, shortcuts or alternative approaches to the task at hand. Ignoring a note should have no negative consequences, but you might miss out on a trick that makes your life easier.



Important boxes detail things that are easily missed: configuration changes that only apply to the current session, or services that need restarting before an update will apply. Ignoring the information will not cause data loss, but may cause irritation and frustration.



Warnings should not be ignored. Ignoring warnings will most likely cause data loss.

#### 1.1.2. Typographic Conventions

We use typographic conventions to call attention to specific words and phrases. These conventions, and the circumstances they apply to, are as follows.

Example	Meaning
Select <u>Guide</u> to display ...	Locate the link named "Guide" on the screen, position the cursor over the link and then depress the appropriate mouse button to follow the link.
Select <b>Add</b> to create a new ...	Locate the button or menu item named "Add" on the screen, position the cursor over the button or menu item and then depress the appropriate mouse button to initiate an action.

Enter <i>Commission</i> ...	Locate the field named "Commission" on the screen, position the cursor over the field and then depress the appropriate mouse button to select the field. Once the cursor appears in the field, enter a value.
Choose <i>Country</i> ...	Locate the field named "Country" on the screen, position the cursor over the field and then depress the appropriate mouse button to display the available options. Then position the cursor over the desired option and depress the appropriate mouse button to select it.
Tick <i>Active User</i> ...	Locate the check box named "Active User" on the screen, position the cursor over the check box and depress the appropriate mouse button to place a visual tick in the box.
Un-tick <i>Active User</i> ...	Locate the check box named "Active User" on the screen, position the cursor over the check box and depress the appropriate mouse button to remove the visual tick in the box.
Enter \$30.95 ...	Enter "\$30.95" using the keys on your keyboard.

### 1.1.3. Procedures

We use numbered sequence of steps to define procedures for performing certain tasks. For example:

#### *Procedure Title*

1. This is the first step of the procedure.
2. This is the second step of the procedure.
  - a. This is the first sub-step of step 2.
  - b. This is the second sub-step of step 2.
3. This is step three.

## 1.2. We Need Feedback

If you find a typographical error in this guide, or if you have thought of a way to make this guide better, we would love to hear from you.

Please submit your feedback using the feedback form on our web site:

<http://www.prolancer.com.au/contact/feedback>.

If you have a suggestion for improving the guide, then try to be as specific as possible when describing your suggestion. Otherwise, if you have found an error, please include the section number and some of the surrounding text so we can find it easily.

## 2. Introduction

### 2.1. About This Guide

This guide describes the Total Recall VR Remote Manager application. Remote Manager is a powerful Java™ based PC software application, included with unlimited licenses as part of your Total Recall VR system.

The guide is intended for Total Recall VR end users. It describes how to use Remote Manager to monitor recordings in progress, search for and replay recordings, create archives and other functions that end users can perform. In addition, it shows systems and network administrators how to configure Total Recall VR with Remote Manager.

Please keep a copy of this guide handy for quick reference.

### 2.2. What is Total Recall VR?



Total Recall VR is a professional audio logging and call recording system which is self-contained, fully featured and cost-effective. Enterprises and governments worldwide use it to create electronic records of many forms of audio communication including telephone, 2-way radio, broadcast radio, public address, room microphones and much more.

Total Recall VR is the ideal solution for:

- Recording business telephone conversations;
- Recording agent calls in contact centres;
- Logging emergency response communication;
- Logging business operations communication;
- Logging radio broadcasts;
- Logging public announcements;
- Creating audio records of meetings, legal proceedings, public enquiries and similar events; and
- Creating compliance records to meet duty of care and legal requirements.



Total Recall VR captures all audio in digital format and stores it in a proprietary, secure and tamper proof file format in its on-board hard drive storage. The file format preserves the originality of the audio that it stores and has a number of built-in mechanisms that aid quick and reliable detection of tampering. However, for ease of access, Total Recall VR client applications can generate copies of recordings in a number of popular and everyday formats such as Microsoft's Wave (.wav) and MPEG Layer-3 (.mp3).

Storing audio by itself does not help when looking for one recording in a store that can hold hundreds of thousands of recordings. That is why, in addition to audio, Total Recall VR captures and then stores information related to each recording and audio source in its database such as start time, end time and duration of recordings, calling and called numbers on telephone calls, DTMF digits during calls, user configurable notes and much more. This information is the backbone of a powerful search capability which can pin point a single recording in a set of hundreds of thousands of recordings which reside either on a Total Recall VR or in one of many types of off-system archives of recordings.

In addition to the audio recorder and the on-board storage, each Total Recall VR system comes with a built-in media player with comprehensive player controls (start, stop, fast-forward, rewind ...). The player can play audio stored in files directly on the system or stream audio to a remote client application which then outputs the sound to the PC speakers of the PC that it runs on.

While audio recording, storage and re-play are the main functions of Total Recall VR, every Total Recall VR offers many more advanced, professional-grade features. For example:

- Ability to capture audio from different types of audio sources (analogue, VoIP, RoIP, AoIP and ISDN), at the same time – hybrid recording.
- Live and real-time monitoring (listening) of recordings in progress on the system itself or on a remote PC with the aid of a PC client application.
- Feature-rich archiver which can create searchable archives of recordings on CD, DVD or BD discs, USB keys or drives and network drives, either automatically or on-demand.
- Automated self-cleaning mechanism that removes obsolete recordings automatically and on regular intervals to keep the system operating endlessly.
- Automated transcoder which compresses audio to free space on the on-board hard drives.
- SNMP agent capable of generating SNMP alarms (traps).
- SMDR integration for a number of popular PBXes.
- Fully internationalised user interface; all menus and software available in multiple languages.
- Role based access control.
- On-board LCD display and control keypad on selected models.
- A number of PC client applications with unrestricted use license.

When audio records are critical to your operations, Total Recall VR delivers. It is professional, reliable and fully self-contained solution for audio logging and call recording that comes at an affordable price.



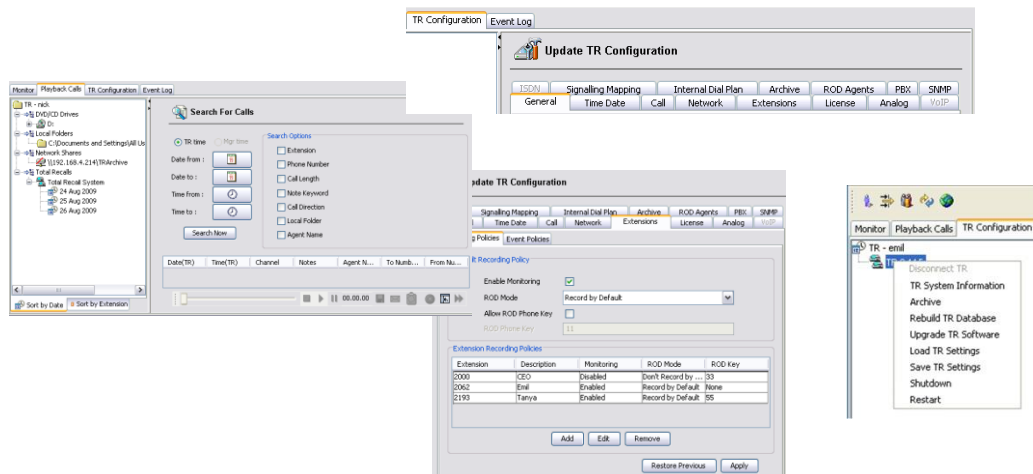
The Total Recall VR Overview [3] guide contains a comprehensive description and overview of Total Recall VR.

### 2.3. What is Remote Manager?

Remote Manager is a powerful Java based PC software application, included with unlimited licenses as part of your Total Recall VR system.



A separate license is required to play recordings in the AMBE format. You can purchase a USB based AMBE decoder from us – order code TRVR-AMBE.



Compatible with Windows 7/8/10, Remote Manager allows you to securely configure and manage your Total Recall VR system, as well as to monitor and search calls, via your PC and existing TCP/IP network.

Remote Manager offers:

- Secure Java™ platform.

- Single click real-time call monitoring.
- Advanced call searching capabilities.
- Easy-to-use playback controls.
- Full unit configuration options.
- Configurable per-user access to all software functionality.
- Configurable extension access per user.
- Flexible call detail views.
- Multi-level password security.
- Save and replay calls in secure trc file format.
- Save and export to mp3 and wav formats for easy file distribution.
- Email calls in trc, mp3 and wav formats.
- Call reporting.
- Event log for system auditing.



Go to <http://www.totalrecallvr.com/downloads> to download the installer for Remote Manager.

## 2.4. Total Recall VR Concepts

### 2.4.1. Extensions

Total Recall VR Extensions are a Total Recall VR concept and should not be confused with PBX extension numbers which are used for desk phones (or mobile devices) within an enterprise.

Total Recall VR Extensions are one of the three different identifiers that can be assigned to the source and the destination of recordings, irrespective of whether the recordings are of a telephone call or another audio source (such as radio program for example).

The other two identifiers are the Total Recall VR Raw and the Total Recall VR Mapped Numbers which do not have the same effect as the Total Recall VR Extensions to the availability of various features.



As identifiers, Total Recall VR Extensions are fundamental to most Total Recall VR features and if not present for a recording, then most

features will not work at all for that recording.

For example, it will not be possible to find recordings by using the ‘Extension’ search criteria.

Total Recall VR can classify calling and called numbers (or PBX extensions) as Total Recall VR Extensions when recording calls. As a matter of fact in most deployments PBX extensions map directly to Total Recall VR Extensions.

However, depending on Total Recall VR configuration, Total Recall VR Extensions can be any free text identifiers. For example, Total Recall VR Extension “Tanya’s Desk Phone” can represent actual PBX extension 100, while “Tanya’s Softphone” can represent (the human form of) PBX extension 200 (which the PBX may know as “sip:ext200@myenterprise.com”).

Total Recall VR Extensions may (and should) be used on deployments where Total Recall VR is used to record audio sources other than telephone calls. For example Total Recall VR Extensions “2Day FM” can be assigned to recordings created on an analogue recording channel which is used to log the radio program from a radio station called 2Day FM.

Total Recall VR uses information that it extracts from call signalling and its configuration to determine Total Recall VR Extensions for recordings. Here is a summary of the steps used by Total Recall VR to determine Total Recall VR Extensions for recordings:

1. Total Recall VR starts with Raw identifiers which it collects from call signalling or determines from its configuration. The following table shows the Raw identifiers for various recording scenarios:

<b>When recording ...</b>	<b>Raw identifiers are ...</b>
Analogue telephone call (outgoing)	Dialled DTMF digits and the ‘Extension’ value, which appears in the configuration for each analogue recording channel.
Analogue telephone call (incoming)	Incoming CLI digits and the ‘Extension’ value, which appears in the configuration for each analogue recording channel.
SIP call	Values in the ‘From’ and ‘To’ header fields in the 200 response to the INVITE message.
H.323 call	Values in the ‘Calling Party Number’ and ‘Called Party Number’ information elements, if present, which appear in the SETUP message.  The previous will be replaced with the first alias that appear in the ‘sourceAddress’ and ‘destinationAddress’ elements, if present, which appear in the ‘User to User’ information element of

	the SETUP message.
RTP Endpoint (passive)	<IP address:Tx port> or <IP address:Rx port> which appear in the RTP Endpoint configuration.
RTP Stream (active)	<From IP address:From UDP port> which appear in the RTP packets and <IP address: UDP port> which appear in the RTP Stream configuration.
RTP Stream Pair (active)	<Tx From IP address:From UDP port>;<Rx From IP address:From UDP port> which appear in the RTP packets and <Tx IP address: UDP port>;<Rx IP address: UDP port> which appear in the RTP Stream configuration.
VRP call	MPT 1327 address or MPT 1343 number.

- Total Recall VR then converts the Raw identifiers to Total Recall VR Mapped identifiers by applying identifier conversion rules, which are specified in the Signalling Mapping configuration, to each of the Raw identifiers.

The mapping rules are regular expressions which specify how to convert Raw identifiers to Mapped identifiers. For example, a mapping rule can convert the Raw identifier “sip:ext200@myenterprise.com” to Mapped identifier “Extension 200”.

- Finally, Total Recall VR attempts to match Mapped identifiers to matching rules that are present in the Internal Dial Plan configuration and if, and only if, it finds a rule that matches a Mapped identifier, then it classifies that identifier as a Total Recall VR Extension.

Continuing from the previous example, if the Internal Dial Plan configuration has an entry that matches the Mapped identifier “Extension 200”, then, and only then, the identifier “Extension 200” will be classified as a Total Recall VR Extension.

### 2.4.2. Recording Policies

Recording policies control the operation of the recorder. Policies determine the method of recording which can be:

- Record by default - Total Recall VR will automatically record all audio sources and telephone calls and keep recordings unless instructed otherwise during recording.
- Don't record by default - Total Recall VR will automatically record all audio sources and telephone calls, but at the end of the recording it automatically discards recordings unless instructed otherwise during recording.

- Record partial calls – Total Recall VR will record only parts of all audio sources and telephone calls, as instructed during recording, and keep all parts concatenated in a single recording.

In addition to the method of recording, policies specify whether real-time monitoring is allowed or not while recording is in progress.

Policies can be one of two types:

- Global – a single system wide policy which applies to recordings from all audio sources and telephone calls on all recording channels.
- Extension – apply only to recordings from audio sources and telephone calls which have been assigned Total Recall VR Extension identifiers. These policies have precedence over the global policy.

Recording policies are useful in a number of ways. For example, policies can be used to:

1. Selectively record (or not) telephone calls to specific telephones.
2. Decide in real-time, while recording, whether to keep a recording of important conversations.
3. Control access to real-time monitoring (listen in) during recording.
4. Allow remote client applications to control (start, stop ...) recording.



Total Recall VR Recording Policies depend on Total Recall VR Extension identifiers.

If Total Recall VR cannot determine Extension identifiers, then the recording policies will not work.

### 3. Start Here

#### 3.1. System Requirements

Remote Manager is a Java based application designed to run on a PC with Windows 7, 8 or 10.

Remote Manager should be installed on a PC with (minimum specification shown):

- 100Gb free hard disk space.
- 2Gb memory (RAM).
- Display hardware that supports the 1024x768 resolution.
- Sound system. External speakers or headphones are required to listen to audio when monitoring and re-playing recordings.
- 10Mbps Ethernet network interface (NIC) hardware.
- Drive capable of reading CD-R, CD-RW, DVD+RW, DVD-R and DVD+R discs. Optional, drive capable of reading BD-R and BD-RE discs.
- A USB 2.0 port.

Remote Manager requires an AMBE decoder license in order to play and export recordings in the AMBE audio format.



You can purchase a USB based AMBE decoder from us – order code TRVR-AMBE.

#### 3.2. Compatibility

In most cases Remote Manager will connect to one, or more, Total Recall VR systems. In any case, the software version of Remote Manager must match the software version of the application that runs on Total Recall VR systems.



If there is a mismatch between the software versions of Remote Manager and Total Recall VR systems, then Remote Manager will either fail to connect to Total Recall VR systems or if it connects, it will exhibit problems with some functions.

### 3.3. Pre-Installation

Remote Manager requires 3<sup>rd</sup> party software and drivers which you must install before installing Remote Manager.

#### 3.3.1. Java SE Runtime Environment

Remote Manager is a Java application and as such it requires a Java SE runtime environment to run.



You must install a 32bit, version 7 or better Java SE Runtime Environment on your PC to use Remote Manager.

You can download a Java SE Runtime Environment installer from <http://www.oracle.com/technetwork/java/javase/downloads/index.html>.

You may already have a Java SE runtime environment on your PC. Ask your friendly technical staff to help you determine this if you are not sure how to check.

If your PC is running a 64bit version of Windows, then you may already have a 64bit Java SE runtime environment on your PC. If this is the case you must install the 32bit Java SE runtime environment on your PC as well in order to use Remote Manager. Ask your friendly technical staff to help you if you are not sure what to do.

#### 3.3.2. FTDI D2XX Drivers

Remote Manager depends on a USB based AMBE decoder when playing AMBE encoded audio.



You can purchase a USB based AMBE decoder from us – order code TRVR-AMBE.

The USB device requires FTDI D2XX drivers to work.



You must install FTDI's D2XX version 2.12.06 WHQL certified drivers on your PC to enable Remote Manager to play recordings in



the AMBE format.

You can download an installer for the drivers from <http://www.ftdichip.com/Drivers/D2XX.htm>.

### 3.3.3. Visual C++ 2015 Redistributable

Remote Manager uses native Windows libraries and as such it requires the Visual C++ 2015 redistributable to run.



You must install the 32bit Visual C++ 2015 redistributable on your PC to use Remote Manager.

You can download an installer for the 32bit Visual C++ 2015 redistributable from <https://www.microsoft.com/en-au/download/details.aspx?id=48145>.

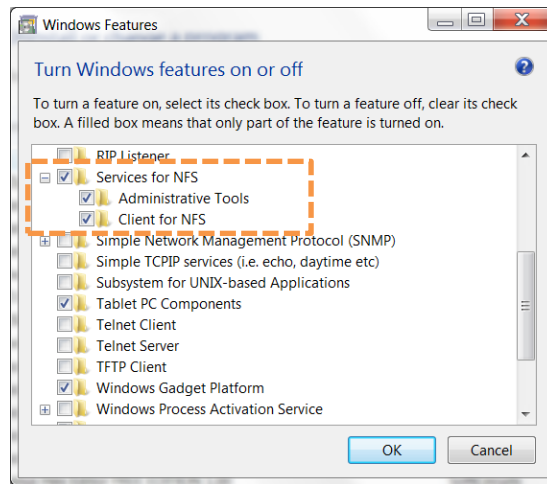
You may already have a Visual C++ 2015 redistributable on your PC or server. Ask your friendly technical staff to help you determine this if you are not sure how to check.

If your PC or server is running a 64bit version of Windows, then you may already have a 64bit Visual C++ 2015 redistributable on your PC or server. If this is the case you must install the 32bit Visual C++ 2015 redistributable on your PC or server as well in order to use Remote Manager. Ask your friendly technical staff to help you if you are not sure what to do.

### 3.3.4. NFS Client

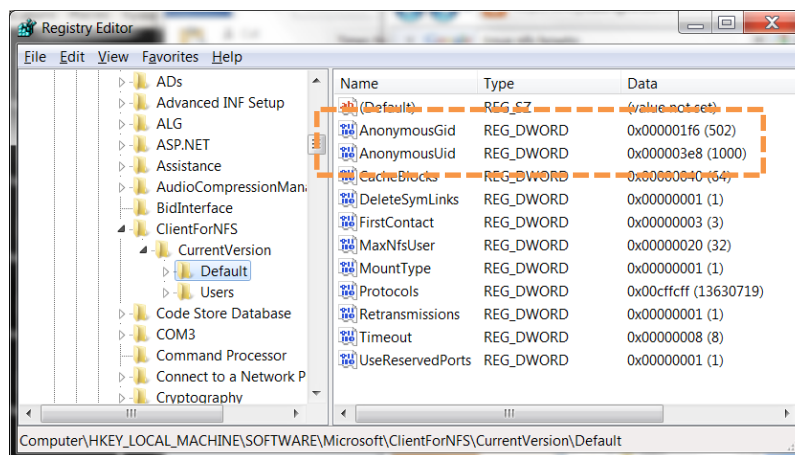
Remote Manager requires an NFS client in order to access network archives on Linux/Unix network drives.

An NFS client is included with Windows 7 and 8, however it is not installed by default. You can install it through **Control Panel – Programs – Programs & Features – Turn Windows features on and off**.



Once installed, you may have to set the group ID (GID) and user ID (UID) for the anonymous user which the client uses to access NFS network drives by adding an *AnonymousUid* and *AnonymousGid* configuration parameters to the NFS client configuration in the registry.

Ask your friendly technical staff to help you if you are not sure what to do. Registry changes can render your PC unusable.

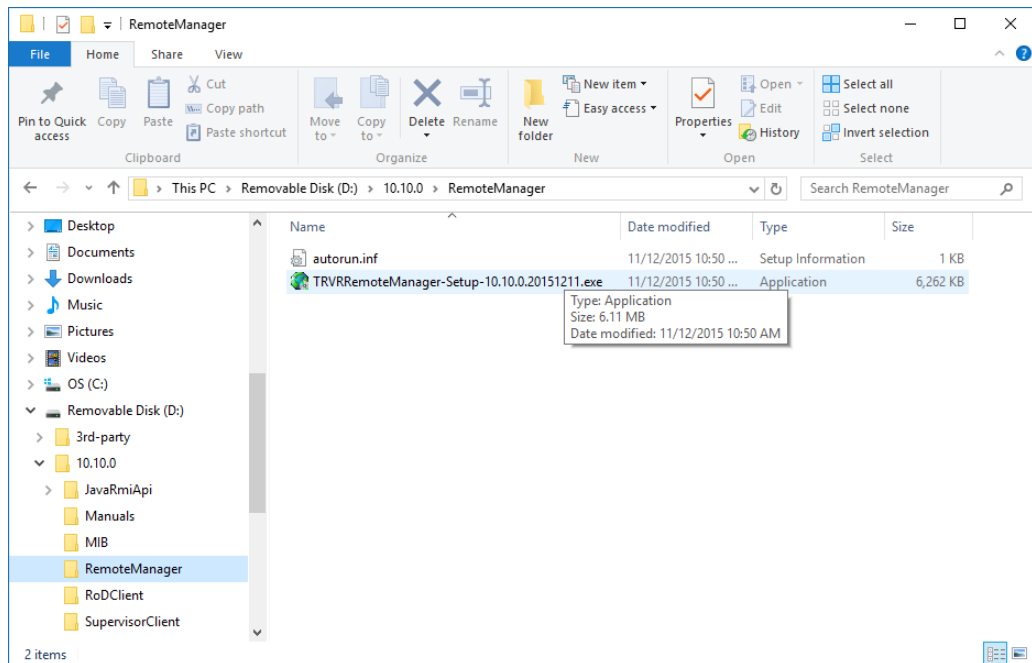


Reboot the machine after making the changes. Now you should be able to map NFS drives as local drives on your PC.

### 3.4. Application Installation

A Remote Manager installer is supplied on the USB key that is included in the box with your Total Recall VR system. The installer is a single self-extracting executable named TRVRRRemoteManager-Setup-x.y.z.yyyymmdd.exe, where x.y.z.yyyymmdd is the software version of the application.

The file is located in the RemoteManager folder on the supplied USB key as shown on the subsequent screen capture.



**Figure 1: Remote Manager Installer Location on the USB key**

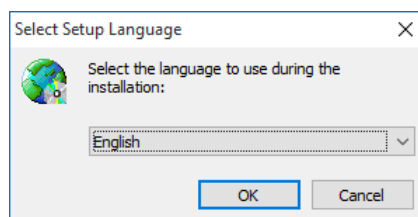


If you have misplaced the USB key that came with your Total Recall VR, then go to <http://www.totalrecallvr.com/downloads> to download the installer for Remote Manager.

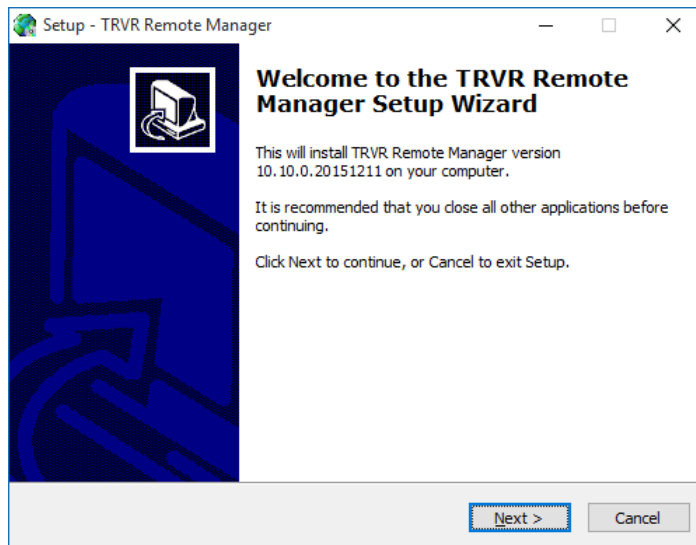
The installer is a wizard based installation program which will guide you through the installation steps. To install Remote Manager on your PC:

### ***Install Remote Manager***

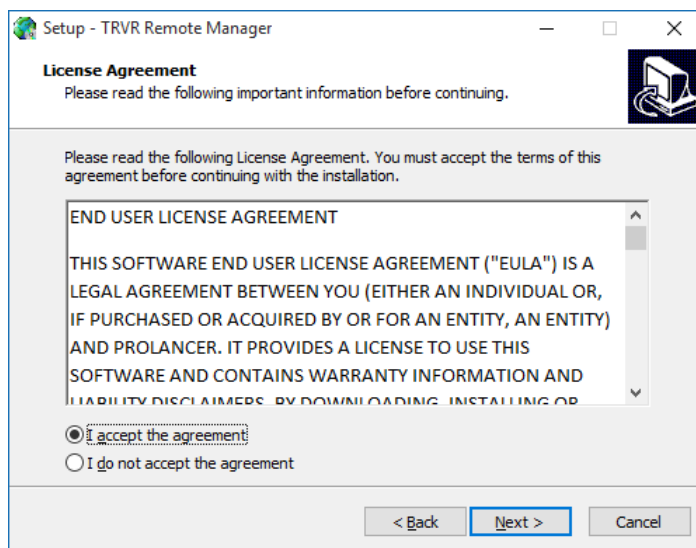
1. Double-click on the TRVRRemoteManager-Setup-x.y.z.yyyymmdd.exe file to launch the installer.
2. The installer will start and display the Select Setup Language dialog:



3. Choose the language that you wish to use during the installation. Then select **OK** to display the initial dialog of the installation wizard.



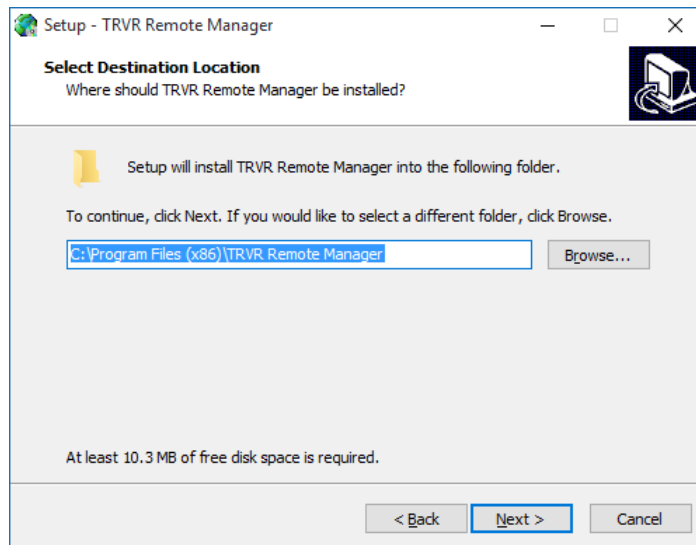
4. Select **Next>** to display the License Agreement dialog:



5. Read and understand the license agreement. Then tick ***I accept the agreement*** to continue the installation.

You must accept the agreement as written in order to install Remote Manager on your PC.

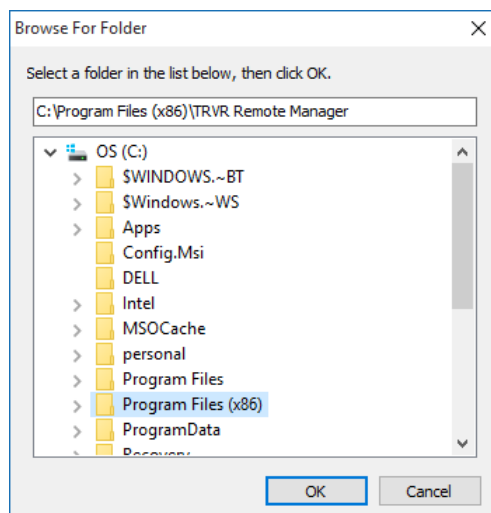
6. Select **Next>** to display the Destination Location dialog:



This dialog allows you to select the root folder where the installer will place the Remote Manager application files. By default, the installer places application files in:

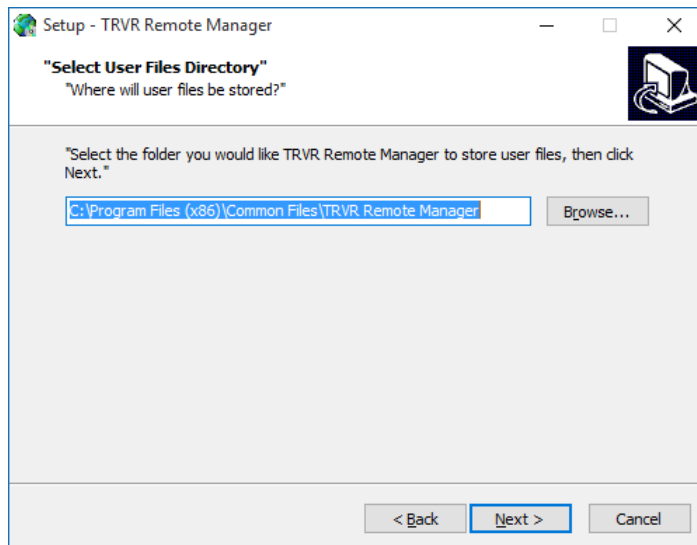
- Windows 7 64 bit system: 'C:\Program Files (x86)\TRVR Remote Manager'.
- All other systems: 'C:\Program Files\TRVR Remote Manager'.

If you wish to change the root folder where the installer will place the Remote Manager application files, then select **Browse** to display the Browse for Folder dialog:



Then select a folder and select **OK**.

7. Select **Next>** to display the User Files Location dialog:

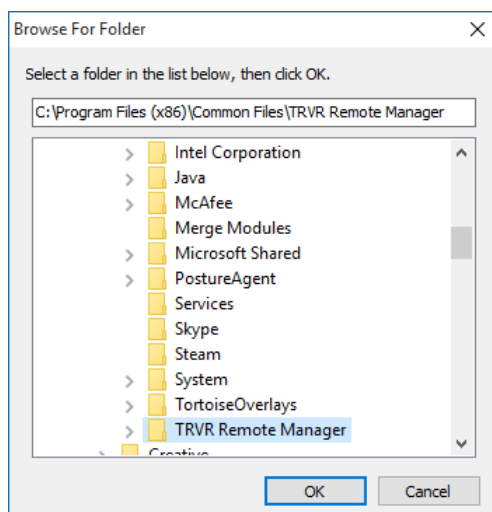


This dialog allows you to select the root directory where Remote Manager will store its configuration and working database files. By default, the installer will configure Remote Manager to use:

- Windows 7 64 bit system: ‘C:\Program Files (x86)\Common Files\TRVR Remote Manager’.
- All other systems: ‘C:\Program Files\Common Files\TRVR Remote Manager’

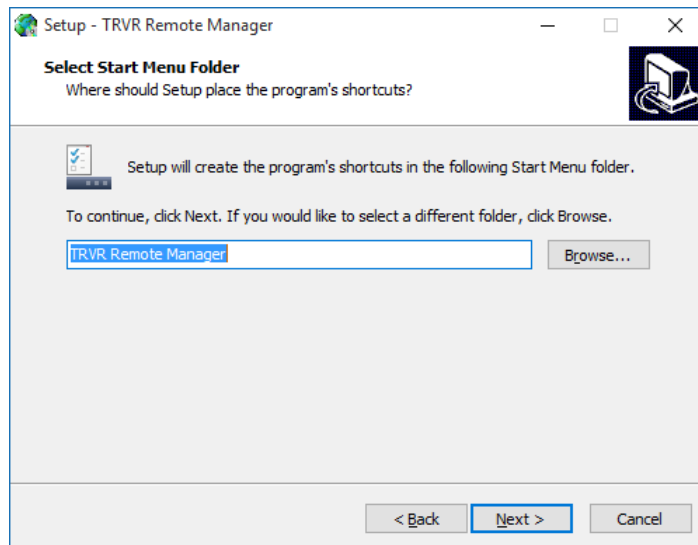
If you wish to allow multiple Windows users to use Remote Manager, then leave the default or select a directory with read and write access for all Windows users that will use Remote Manager.

If you wish to change the root directory where Remote Manager will store its configuration and working database files, then select **Browse** to display the Browse for Folder dialog:



Then select a folder and select **OK**.

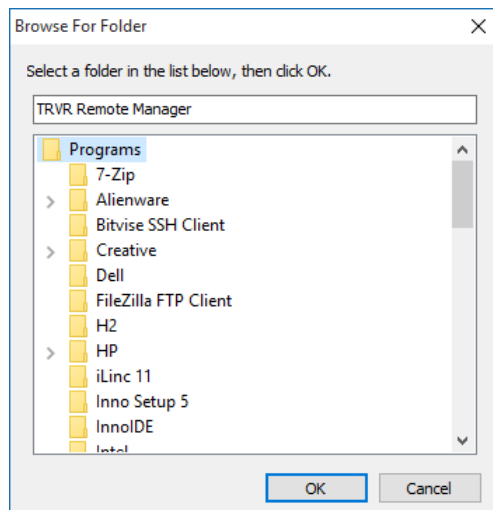
8. Select **Next>** to display the Start Menu Folder dialog:



This dialog allows you to select the name of the Start Menu folder which will contain the shortcuts for the Remote Manager application.

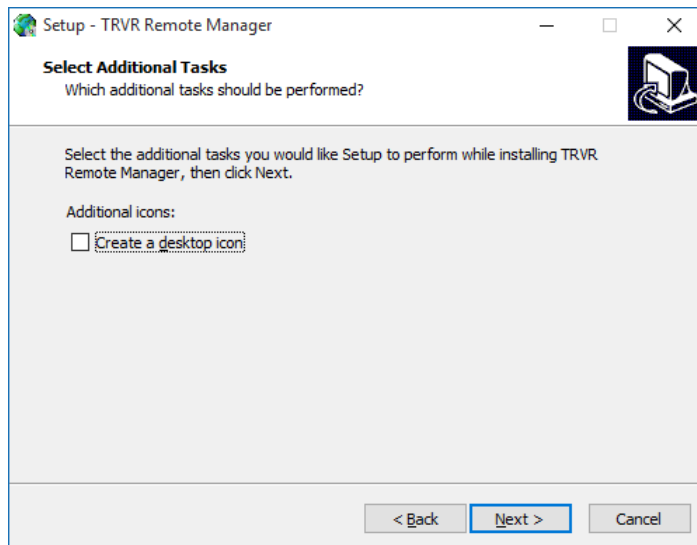
By default, the installer will create a folder named 'TRVR Remote Manager' and place all application shortcuts in it.

To change the folder, either enter a name for it, or select **Browse** to display the Browse for Folder dialog:

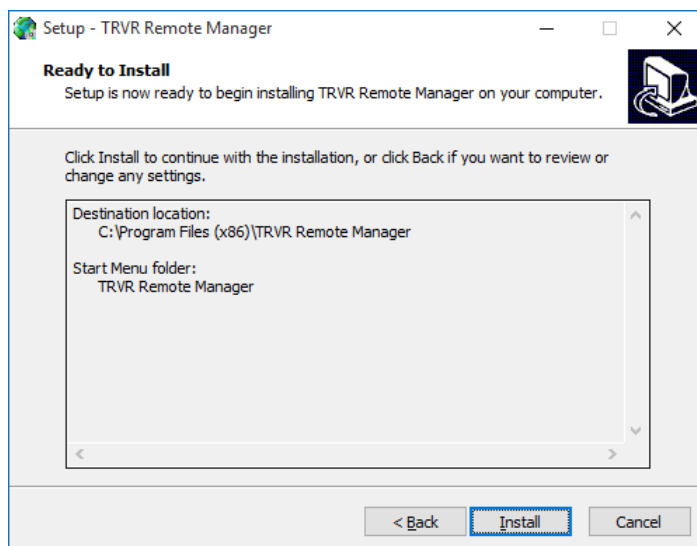


Then select a folder and select **OK**.

9. Select **Next>** to display the Additional Tasks dialog:



10. Optionally tick *Create a desktop icon* if you wish to have an icon on the desktop that will launch Remote Manager.
11. Select **Next>** to display the Ready to Install dialog:

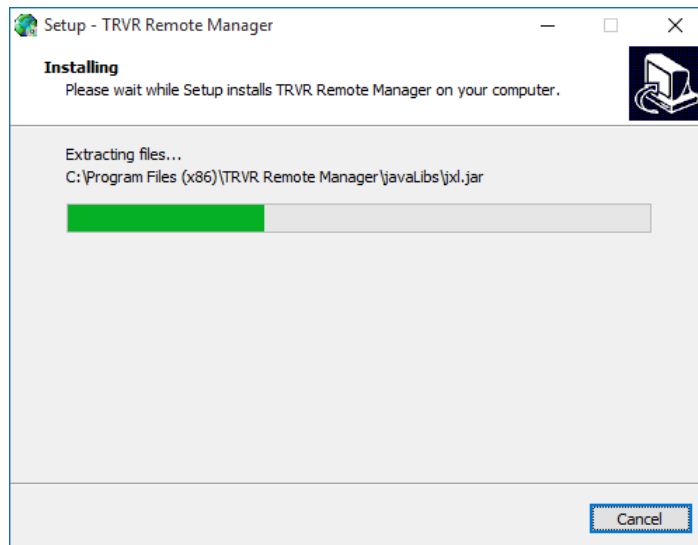


This dialog shows a summary of all settings that will guide the installer during the installation of Remote Manager.

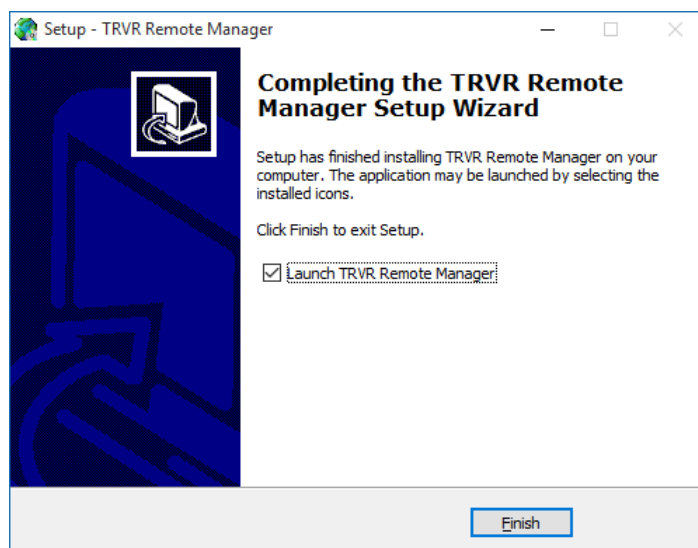
If you are unhappy with any of the settings, then select **<Back** until you reach the dialog that allows you to change them.

12. Select **Install** to install the application. This installer will start the installation and show progress as follows:





13. When done, the installer will show the final dialog:



14. Optionally, tick *Launch TRVR Remote Manager* if you want to run Remote Manager immediately after you select **Finish**.

15. Select **Finish** to complete the installation.

If you ticked *Launch TRVR Remote Manager* during step 14, then Remote Manager will start immediately after the installer closes the last dialog.

### 3.5. Application Upgrade

To upgrade Remote Manager, first uninstall the old version and then install the new version using the installation procedure.

When you uninstall Remote Manager, the uninstaller does not remove the directory where Remote Manager stores its configuration and working database files. By default, this directory is:

- Windows 7 64 bit system: 'C:\Program Files (x86)\Common Files\TRVR Remote Manager'.

- All other systems: 'C:\Program Files\Common Files\TRVR Remote Manager'.

However, this can be any other directory as explained in step 7 of the installation procedure.

If you specify the same directory during the installation of the new version of Remote Manager, then the new version will automatically inherit the settings of the previous version.

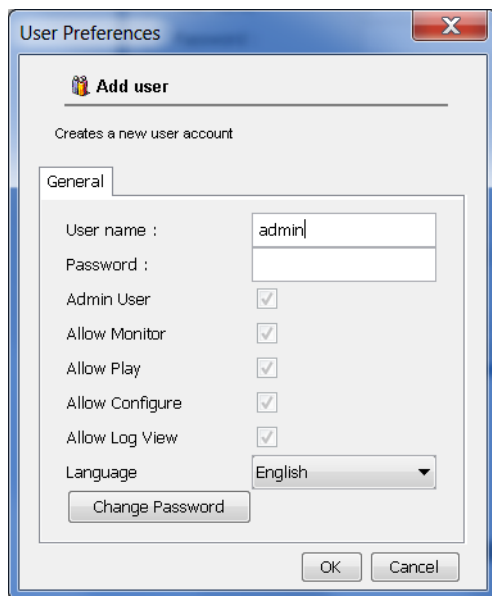
Otherwise, if you specify a different directory, then you will need to enter users and Total Recall VR systems, among other things, again when you run the new version of Remote Manager.

### 3.6. First Run

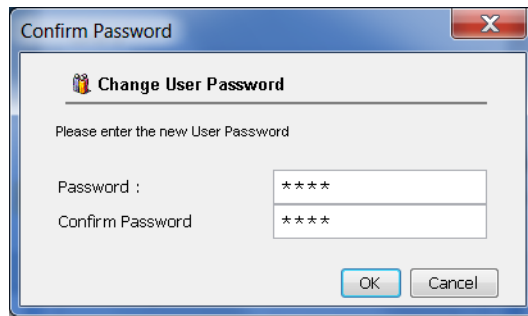
Remote Manager requires at least one administrator user to run. As a result, when you run Remote Manager for the first time, it will prompt you to enter a username and password so it can create the first administrator user.

#### *Remote Manager First Run*

1. When you start Remote Manager for the first time it will display the User Preferences dialog which will ask you for the credentials of the first administrator user.

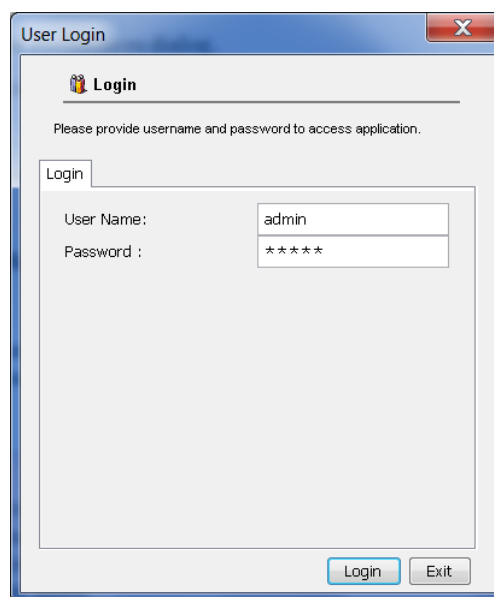


2. Enter *User name*.
3. Choose *Language*. Remote Manager will use this language as a display language when the user logs in.
4. Select **Change Password** to display the Change Password dialog.



5. Enter ***Password*** and ***Confirm Password***. Both values must be the same.
6. Select **OK** to return to User Preferences dialog.
7. Select **OK** to create the first administrator user and then start Remote Manager.

From then on, Remote Manager will display the Login dialog when you run it:



**Figure 2: Remote Manager Login Dialog**

Keep the credentials (user name and password) of the first user in a safe place. They are stored in encrypted form and cannot be recovered from the configuration.



If you lose the credentials of the first user and you do not know the credentials of another administrator user, then you will have to remove the entire Remote Manager configuration before you can run Remote Manager again.

### 3.7. Total Recall VR Remote Manager Interface

In most cases Remote Manager will connect to one or more Total Recall VR systems. Remote Manager uses the Remote Manager Interface provided by Total Recall VR systems to connect and interact with Total Recall VR systems.

Section 6.5 Remote Manager Interface in the Total Recall VR Embedded GUI User Guide [5] explains how to configure the Remote Manager Interface on Total Recall VR models that feature a built-in screen. This is the case with:

- Total Recall VR LinX Omnia;
- Total Recall VR LinX Altus;
- Total Recall VR LinX Neos;
- Total Recall VR LinX Essence (GUI edition); and
- Total Recall VR LinX Evolution (GUI edition).

If you wish to use Remote Manager to connect to one of the models on the afore list, then configure the Remote Manager Interface on the system as explained in the Total Recall VR Embedded GUI User Guide [5] first.

Total Recall VR systems which do not feature a built-in screen are pre-configured to accept connections from applications like Remote Manager on their LAN 1 network interface in the factory. The Remote Manager Interface on such systems accepts connections from applications like Remote Manager on IP address 192.168.1.100 and port 10010. This is the case with:

- Total Reacall VR LinX R320;
- Total Recall VR LinX Essence; and
- Total Recall VR LinX Evolution.

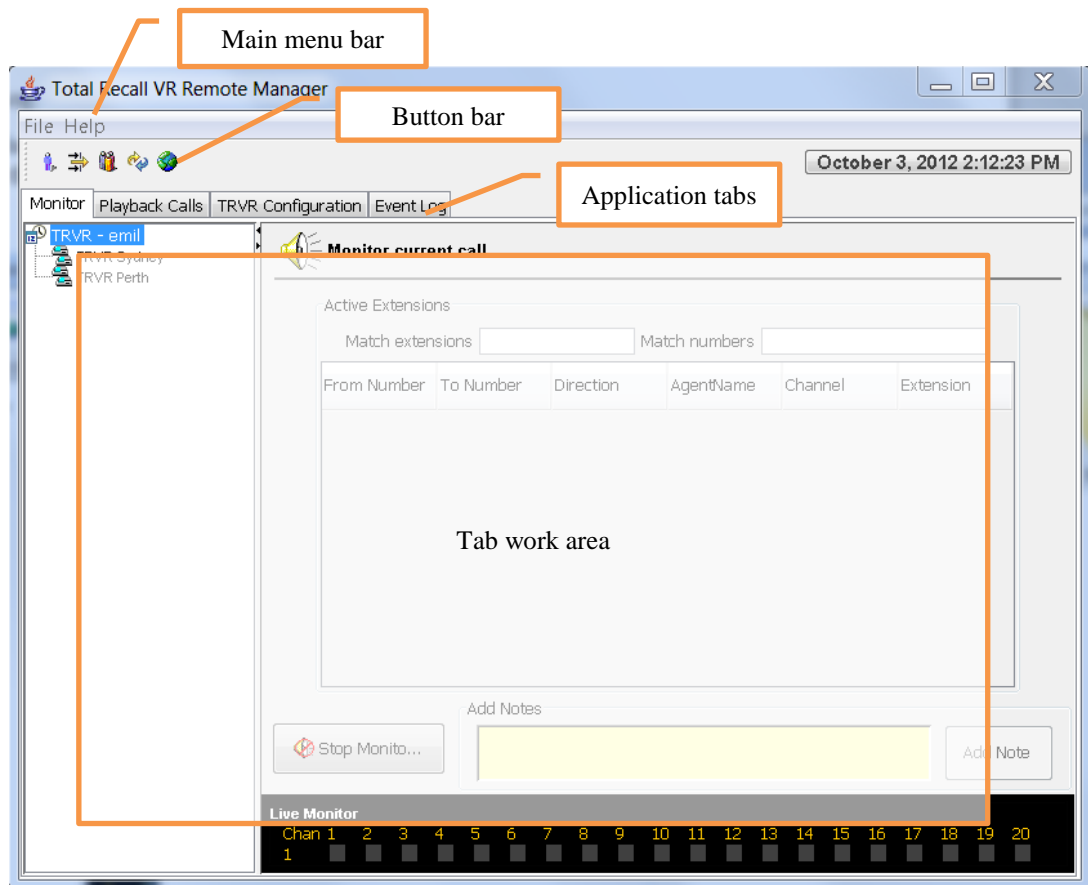
If you wish to use Remote Manager to connect to one of the models on the afore list, then you must use the above Remote Manager Interface configuration to connect with Remote Manager to the system for the first time. Then, you can use Remote Manager to modify the configuration of the Remote Manager Interface as desired. From then on, you can connect to the system with Remote Manager using the new configuration of the Remote Manager Interface.

## 4. User Interface

Remote Manager is a tabbed application which has 4 main tabs:

1. Monitoring.
2. Playback.
3. Configuration.
4. Event Log.

In addition to the tabs, the application has a main menu bar and a quick access button bar as shown on the subsequent screen capture.



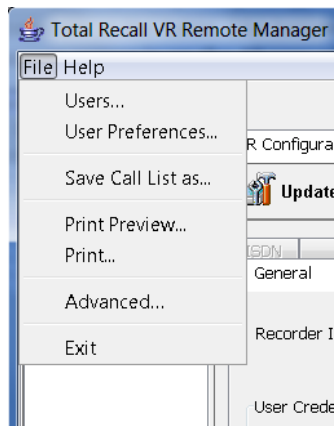
**Figure 3: Remote Manager User Interface Components**

The work area for each tab takes most of the screen space as shown on the previous screen capture.

### 4.1. Main Menu Bar

The Remote Manager main menu bar includes 2 menus: File and Help.

### 4.1.1. File Menu



The file menu includes the following options:

#### 1. Users

This menu option is available to users that are administrator only. It opens the Users dialog which allows administrator to manage users, their access credentials and connections to Total Recall VR systems.

#### 2. User Preferences

It opens the User Preferences dialog which allows users to self-manage their password and language preference. Administrators can manage own connections to Total Recall VR systems as well.

#### 3. Save Call List as

This option is available only when the Playback tab is active. It saves the list of recordings that is displayed as a '.txt' or '.csv' file.

#### 4. Print Preview

This option is available only when the Playback tab is active. It opens a print preview of a recording report which comprises of a list of all recordings that are shown on the Playback tab.

#### 5. Print

This option is available only when the Playback tab is active. It prints a recording report which comprises of a list of all recordings that are shown on the Playback tab.

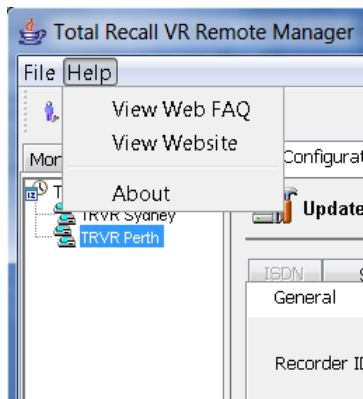
#### 6. Advanced

It opens the Advanced Settings dialog which allows users to specify the IP address and port that Remote Manager will use to accept audio streams from Total Recall VR systems when monitoring recordings in progress or playing recordings that reside on the systems.

#### 7. Exit

It terminates Remote Manager.

### 4.1.2. Help Menu



The help menu includes the following options:

- 1. View Web FAQ**

It starts the default system web browser and loads the FAQ page of the Total Recall VR web site.

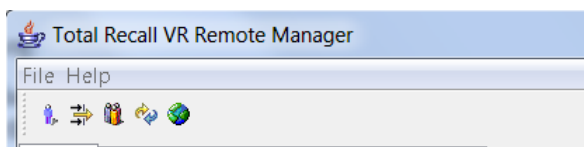
- 2. View Website**

It starts the default system web browser and loads the main page of the Total Recall VR web site.






- 3. About**

It display 'about' information about the application including the version number of the application.

### 4.2. Button Bar



The button bar provides single click access to most used functions of the application. The buttons and their uses are:

-  This button opens the User Preferences dialog which allows users to self-manage their password and language preference. Administrators can manage own connections to Total Recall VR systems as well.
-  This button is available to administrator users only. It opens the Add Total Recall VR dialog which allows users to add a connection to a Total Recall VR system.
-  This button is available to administrator users only. It opens the Users dialog which allows administrator to manage users, their access credentials and connections to Total Recall VR systems.
-  This button refreshes the content of trees which appear on all tabs.
-  This button opens the Choose Language dialog which allows users to select a display language.

### 4.3. Application Tabs

Remote Manager has 4 main tabs and each of the tabs makes provisions for a defined user function.

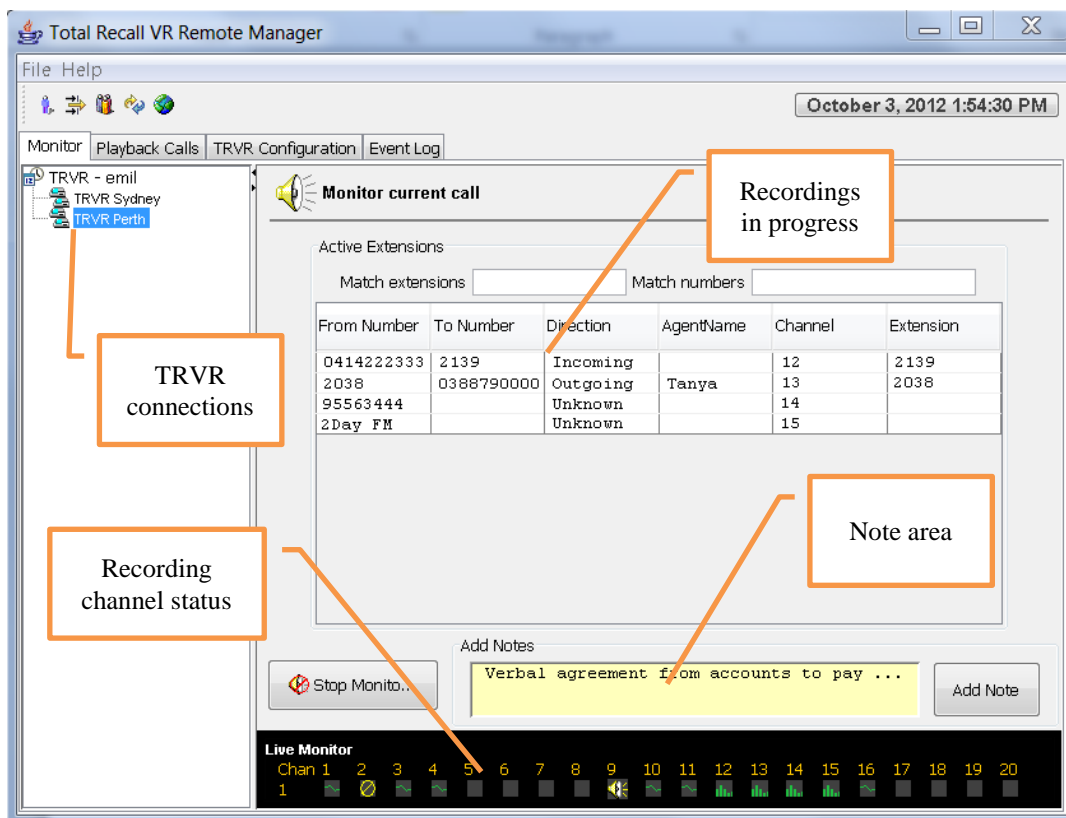


Not all tabs are shown to all users. User profiles define which tabs are accessible.

#### 4.3.1. Monitoring Tab

This tab is useful only to users who have connections to one or more Total Recall VR systems. Users can select a Total Recall VR system, connect to it, see active recordings in progress, optionally monitor (listen-in) and add notes to recordings in progress.

This tab depends on a streaming audio player to play audio while monitoring recordings. The streaming player uses the audio system of the PC and will output sound to the speakers or headphones connected to the audio system. It does not use the mono PC speaker, if installed.



**Figure 4: Remote Manager Monitoring Tab**

By default, this tab display recordings in progress for the selected Total Recall VR system, in reverse start time order (latest on top), as shown on the previous figure.




On the left hand side, the tab shows a tree of connections to Total Recall VR systems. Each connection has an identifier (for example TRVR Sydney), which identifies the Total Recall VR system that it represents.


The middle area of the tab shows a table of recordings in progress. This is the recordings in progress on the Total Recall VR represented by the connection that is selected in the tree of connections. The columns of the table are:


- **From Number:** a Total Recall VR Extension if available, or a Total Recall VR Mapped Number if not, that identifies the source of the audio that is being recorded.
- **To Number:** a Total Recall VR Extension if available, or a Total Recall VR Mapped Number if not, that identifies the destination of the audio that is being recorded.
- **Direction:** if a telephone call is being recorded, then this column shows the class of call as determined by the Total Recall VR. Can be one of:
  - Unknown: indicates that the recording could not be classified.
  - Incoming: indicates that the recording has been classified as ‘incoming’. For example, if the recording is of a telephone call, then the call is an incoming call.
  - Outgoing: indicates that the recording has been classified as ‘outgoing’. For example, if the recording is of an RTP stream, then the stream is a stream that is generated by an RTP source.
  - Internal: indicates that the recording has been classified as ‘internal’. For example, if the recording is of a telephone call, then the call is an internal call.
- **Agent Name:** shows the name of the agent (if any) that is associated with the recording.
- **Channel:** a unique identifier of the Total Recall VR recording channel that is used for recording.
- **Extension:** Total Recall VR Extensions if available, that identify the source and the destination of the audio that is being recorded.

Just below the table of recordings in progress is the notes area which makes provision for writing and attaching notes to recordings in progress.

Finally, at the bottom the tab shows the status of each of the recording channels on the Total Recall VR. Each recording channel is represented by a single square which can display an image which indicates the status of corresponding recording channel. The images and their meaning are:

 Recording is in progress on the channel.

 Monitoring (listen-in) is in progress on the channel.

 The channel is idle and ready to record.



Monitoring is disabled on the channel by a Total Recall VR Recording Policy.



The current user is not authorised to view the status of the recording channel or perform actions on the channel.



Monitoring is not available on this channel due to insufficient network bandwidth between the PC running Remote Manager and the Total Recall VR system.

This area of the tab is automatically updated as, and when, each channel's status changes.



Total Recall VR Recording Policies that exist on the Total Recall VR system that is being accessed may prevent users from monitoring and adding notes to recordings in progress.

All operations on this tab are subject to the set of 'allowed' Total Recall VR Extensions for the user and the Total Recall VR system that is being accessed. The set is defined in the connection configuration.

### 4.3.2. Playback Tab

This tab is useful to users that wish to locate and re-play recordings that have completed. The recordings can be stored on Total Recall VR systems or in one of the many different types of archives.

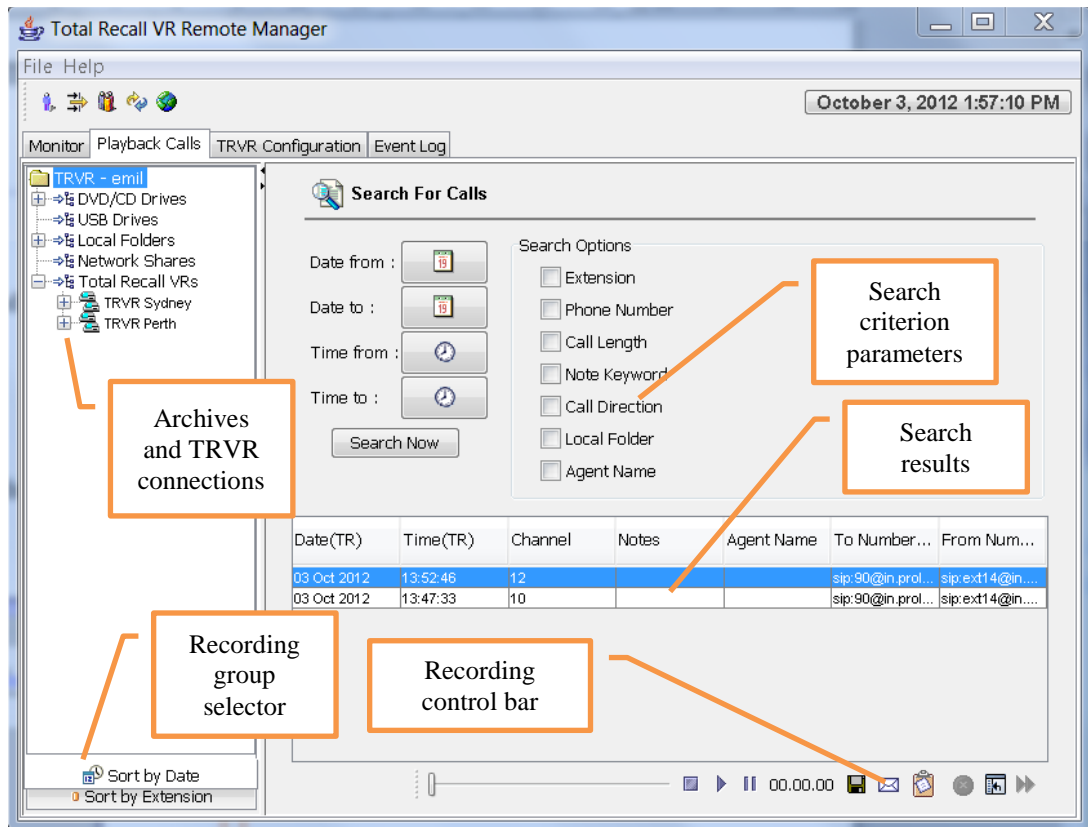
Unlike all other tabs, it is not necessary to define connections to Total Recall VR systems in order to use this tab. Instead, users can use this tab to access recordings in the following Total Recall VR archives:

- Archives stored on CD, DVD or BD discs (requires compatible disc reader).
- Archives stored on USB keys or disk drives (requires USB port).
- Archives stored in folders on the local disk.
- Archives stored on network disks (Windows has an in-built client for accessing Windows disks; however, an NFS client is required to access Linux/Unix disks).

If connections to Total Recall VR systems are defined for the user, then the user will be able to search and re-play recordings that are located on the Total Recall VR systems that are represented by the connections as well.

This tab depends on an audio player to re-play recordings that are stored in one of the supported archives. In addition, it depends on a streaming audio player to re-paly recordings that are stored on Total Recall VR systems. Both players use the audio

system of the PC and will output sound to the speakers or headphones connected to the audio system. The players do not use the mono PC speaker if installed.



**Figure 5: Remote Manager Playback Tab**

On the left hand side, the tab shows a tree of various archives and optionally connections to Total Recall VR systems. Each archive has an identifier which, in most cases, is the drive letter or directory name where the archive resides. If present, each Total Recall VR connection also has an identifier (for example TRVR Sydney), which identify the Total Recall VR system that it represents.

The last level of the tree is a group of recordings. Users can choose whether the groups should be based on the start date of recordings or Total Recall VR Extension. The selector is located at the bottom of the tree area. The groups are a quick way to help users locate recordings based on start date or Total Recall VR Extension.


Moving to the right, the tab has an area where users can define search criteria for recordings by specifying various search parameters.


Just below the search criterion area is a table that shows the results of the last search.


And just below the table is a control bar with a number of buttons which allow users to perform various operations on recordings that appear in the table of search results. The buttons and their uses are:


- It stops an active re-play.
- ▶ It starts re-paly of the recording that is selected in the table of search results.


|| It pauses active re-play.


 It saves the recordings that are selected in the table of search results to a user specified folder and optionally converts the recordings to MP3 or WAV format before saving them.

 It e-mails the recordings that are selected in the table of search results to a user specified address and optionally converts the recordings to MP3 or WAV format before e-mailing them.

 It adds a note to the recordings that are selected in the table of search results.

 It deletes the recordings that are selected in the table of search results.

 It allows users to select which columns are shown by the table of search results.

 It displays the next set of recordings that match the search criterion. By default, the table of search results shows the most recent 50 recordings that match the search criterion. Use this button to see older recordings in batches of 50.



All operations on this tab are subject to the set of 'allowed' Total Recall VR Extensions for the user and the Total Recall VR system that is being accessed. The set is defined in the connection configuration.

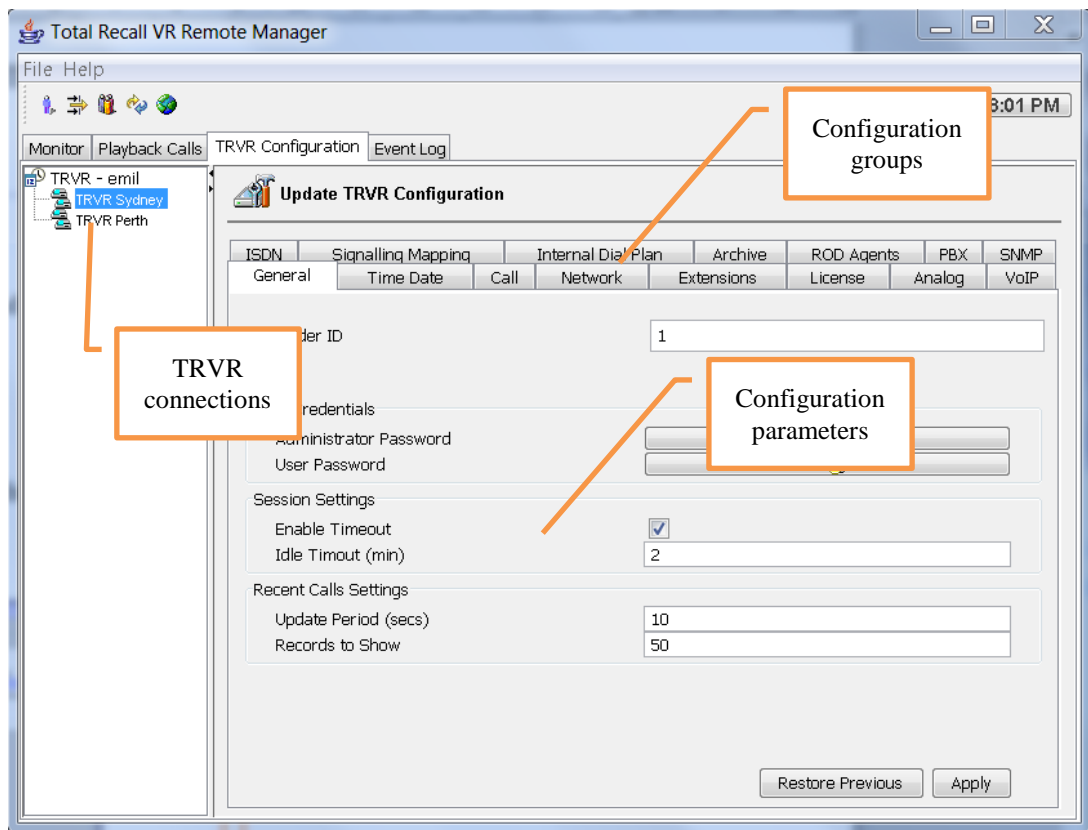
### 4.3.3. Configuration Tab



Only administrators should have access to this tab.

This tab is useful only to users who have connections to one or more Total Recall VR systems. Users can select a Total Recall VR system, connect to it and manage its configuration.

This tab provides direct access to the configuration of Total Recall VR systems. All changes are applied directly to the Total Recall VR systems. Remote Manager does not store a local copy of the configuration. Exercise caution when using the facilities provided by this tab. As a safety precaution, do not allow access to this tab to users that do not need to have access to the configuration of Total Recall VR systems.



**Figure 6: Remote Manager Configuration Tab**

On the left hand side, the tab shows a tree of connections to Total Recall VR systems. Each connection has an identifier (for example TRVR Sydney), which identifies the Total Recall VR system that it represents.

The rest of the tab area is organised in multiple tabs, one for each logical group of configuration parameters. Each of these tabs provides facilities for the direct management of part of the configuration of the Total Recall VR system that is represented by the selected connection in the tree area.

#### 4.3.4. Event Log Tab

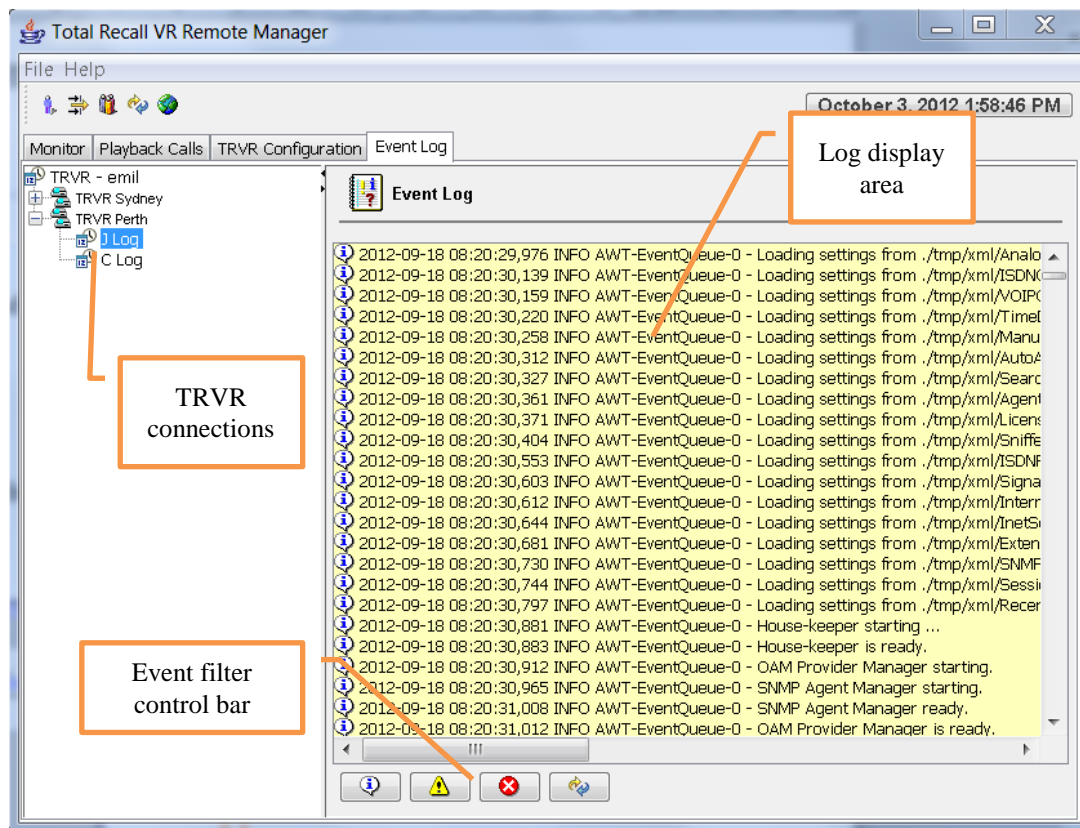


Only administrators should have access to this tab.

This tab is useful only to users who have connections to one or more Total Recall VR systems. Users can select a Total Recall VR system, connect to it and view the system logs.

This tab provides direct, read-only, access to the logs of Total Recall VR systems.

Personal and confidential information may appear in the logs; for example, credit cards numbers that callers enter during calls that are being recorded. As a safety precaution, do not allow access to this tab to users that do not need to have access to the logs of Total Recall VR systems.







**Figure 7: Remote Manager Event Log Tab**

On the left hand side, the tab shows a tree of connections to Total Recall VR systems. Each connection has an identifier (for example TRVR Sydney), which identifies the Total Recall VR system that it represents.

To the right, the log display area show the most recent 1000 events that are present in log file of the selected Total Recall VR system.

And just below the event display area is a control bar with a number of buttons which allow users to filter different types of events. The buttons and their uses are:

-  It hides/shows informational events. This type of event is most common in the logs.
-  It hides/shows warnings. This type of events indicates that an abnormal condition has occurred; however, the system was able to recover from it.
-  It hides/shows error events. This type of event indicates that a serious problem occurred. The system may not have been able to recover from it.
-  It loads the most recent 1000 entries in the log.

The buttons work like a toggle. Select a button once to hide events, select it again to show events, and so on.

## 5. Access Control

### 5.1. Roles

Remote Manager uses a role based access control mechanism which is independent from the access control mechanism that exists on Total Recall VR systems. The roles are:

1. Administrator – users with this role are allowed to access all functions of Remote Manager.
2. User – users with this role are not allowed to manage other users, or to define connections to Total Recall VR system. Users with this role are subject to further restrictions imposed by their user profile.

### 5.2. Tab Access

The role based access control system is strengthened by a tab access control system. Users with the User role can be restricted to access only some of the main four tabs.

For example, a user can be given access only to the Playback tab which in effect will prevent the user from monitoring recordings in progress.

### 5.3. Total Recall VR Access

In addition to role and tab access control, only administrators can define connections to Total Recall VR systems for each user with the User role.

As a result users with the User role can be restricted to access only certain Total Recall VR systems or none at all.

### 5.4. Extension Restrictions

Finally, in addition to all previous access control mechanisms, administrators can specify a set of “allowed” Total Recall VR Extensions for each of the connections to Total Recall VR systems and for each of the users with the User role.

The set of extensions can either allow access to recordings or disallow access to recordings.

As a result, users will only be able to access a restricted set of recordings when using Remote Manager.

This is useful when an organisation has multiple departments for example. Users in each department can be given access only to recordings of calls made by other members of the same department.

### 5.5. User Management




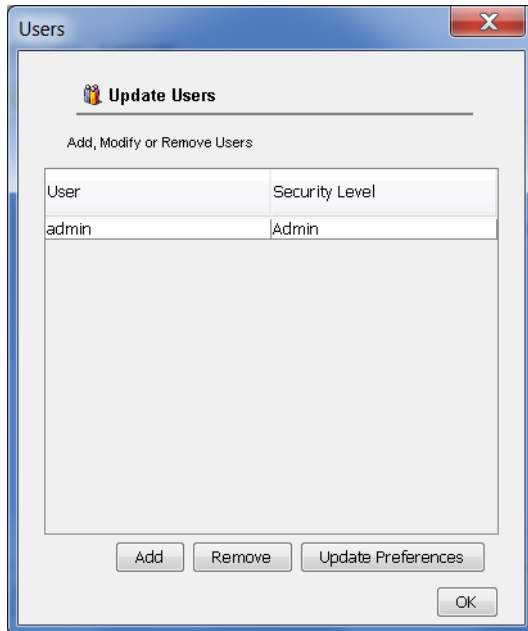
You must be an administrator user to perform the procedures in this section.

In most cases the administrator user that you create when you run Remote Manager for the first time (see section 3.6 First Run) will then create one or more users that can use Remote Manager.

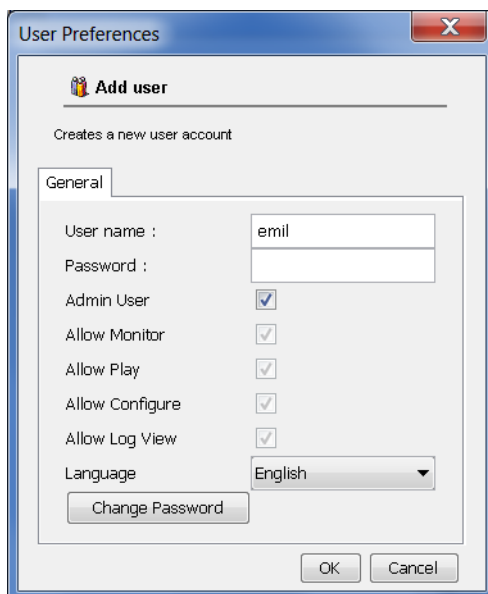
It is a good practice to create a “backup” administrator user.

### *Create a User with Administrator Role*

1. Select  on the button bar to display the Update Users dialog. As an alternative select **Users ...** from the **File** menu.



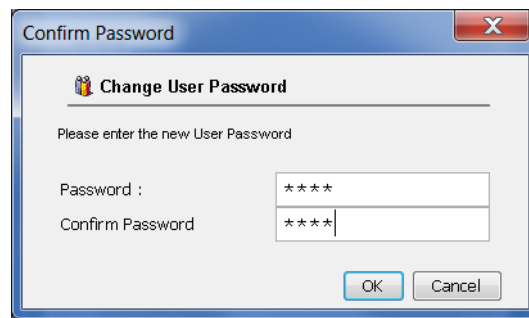
2. Select **Add** to display the Add User dialog.



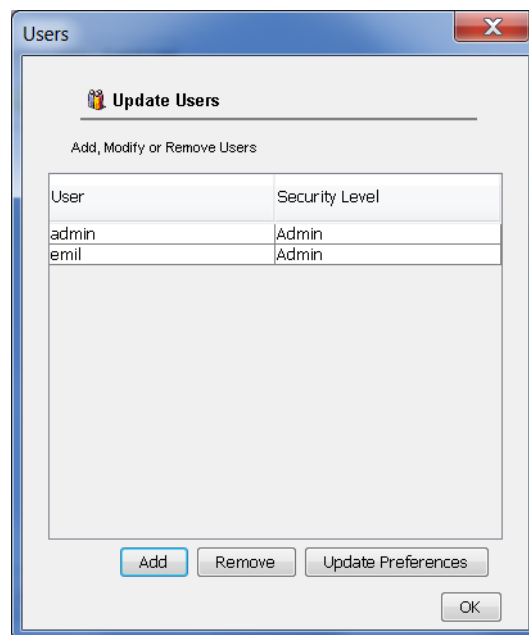
3. Enter *User name* and tick *Admin User*.
4. Choose *Language*. Remote Manager will use this language as a display language when the user logs in.



5. Select **Change Password** to display the Change User Password dialog:



6. Enter *Password* and *Confirm Password*. Both values must be the same.
7. Select **OK** to return to the Add User dialog.
8. Select **OK** to return to the Update Users dialog which now will show the new user:




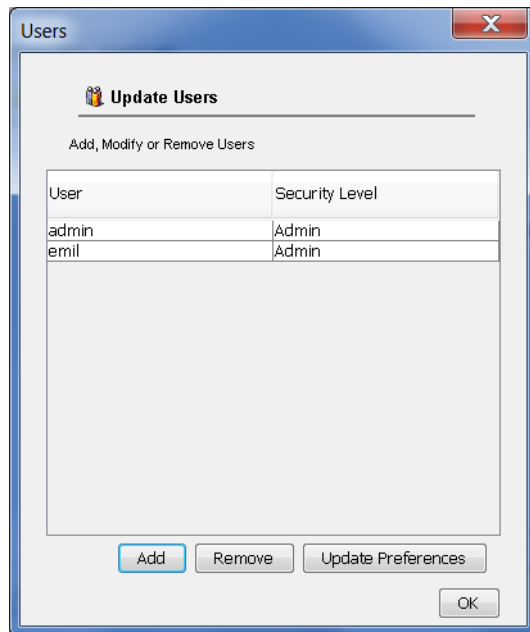
9. Repeat steps 2 to 7 to add other administrators.
10. Select **OK** to complete the procedure.

The new administrator is now allowed to use Remote Manager on the PC. And if the main administrator ever forgets their password, you can use the “backup” administrator to assign a new password to the main administrator.

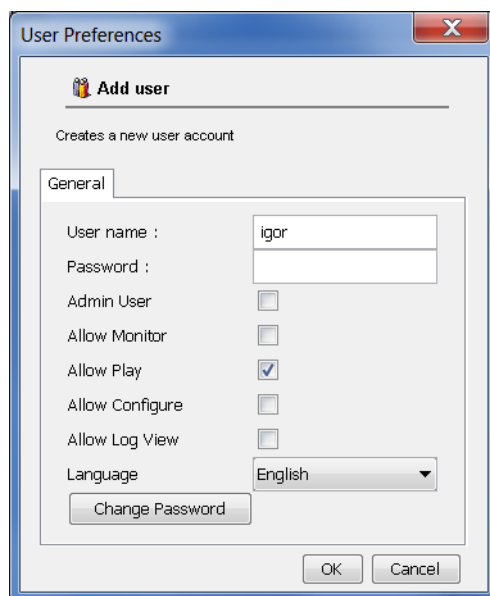
It is never a good practice to use administrator users. The same rule applies to Remote Manager. It is recommended that you create users with the User role and use them when working with Remote Manager.

### *Create a User with User Role*

1. Select  on the button bar to display the Update Users dialog. As an alternative select **Users ...** from the **File** menu.




2. Select **Add** to display the Add User dialog.

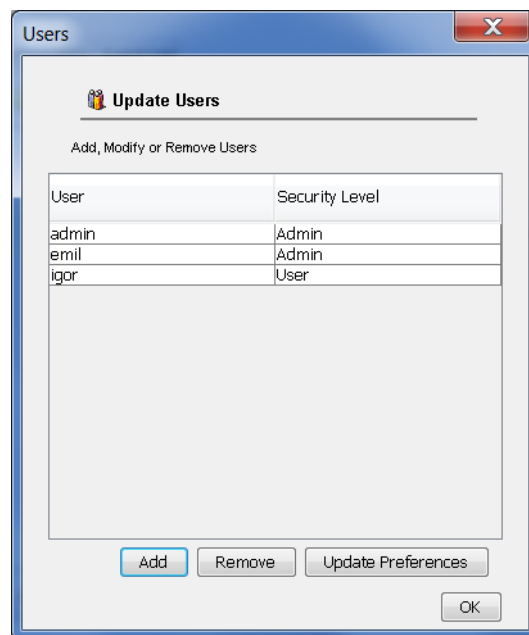


3. Enter *User name*.
4. Optionally tick (you must tick at least one):
  - a. *Allow Monitor* if you wish to permit the user access to the Monitoring tab.
  - b. *Allow Play* if you wish to permit the user access to the Playback tab.
  - c. *Allow Configure* if you wish to permit the user access to the Configuration tab.
  - d. *Allow Log View* if you wish to permit the user access to the Event Log tab.
5. Choose *Language*. Remote Manager will use this language as a display language when the user logs in.

6. Select **Change Password** to display the Change User Password dialog:



7. Enter *Password* and *Confirm Password*. Both values must be the same.
8. Select **OK** to return to the Add User dialog.
9. Select **OK** to return to the Update Users dialog which now will show the new user:



User	Security Level
admin	Admin
emil	Admin
igor	User

10. Repeat steps 2 to 9 to add other users with the User role.
11. Select **OK** to complete the procedure.

The new user can now use Remote Manager on the PC, subject to the access restrictions to tabs specified in step 4 of the previous procedure.

## 5.6. Password Recovery



You must be an administrator user to perform the procedures in this section.




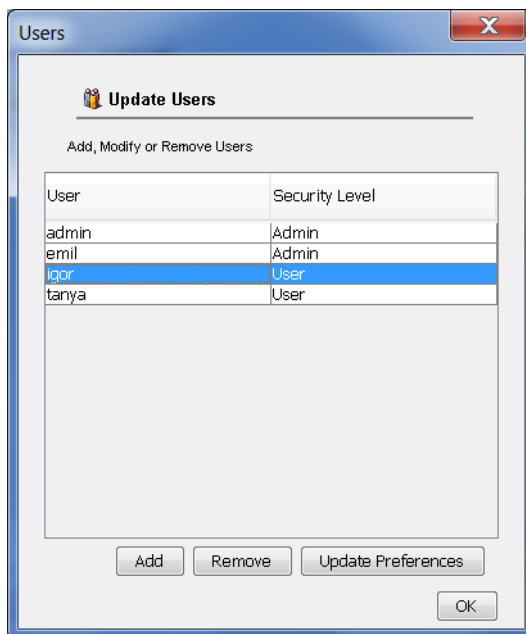
If you configure only one administrator user, and that user forgets their password, then you will have to remove the entire Remote Manager configuration and re-configure it just as if you have installed it for the first time on the PC.

It is not possible to recover passwords for Remote Manager users. An administrator user must set a new password for a user, if the user forgets their password.

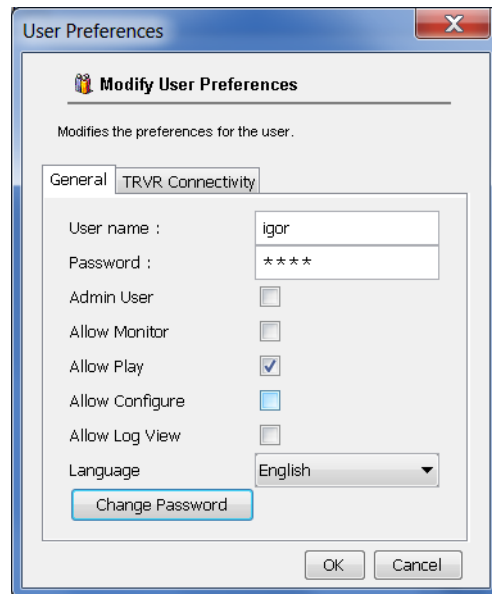
At this stage Remote Manager allows administrator to set any password for users. There are no restrictions.

### *Set a New Password for a User*

1. Select  on the button bar to display the Update Users dialog. As an alternative select **Users ...** from the **File** menu.



2. Select a user and then select **Update Preferences** to display the Modify User Preferences dialog:



3. Select **Change Password** to display the Change User Password dialog:



4. Enter **Password** and **Confirm Password**. Both values must be the same.
5. Select **OK** to return to the Modify User Preferences dialog.
6. Select **OK** to return to the Update Users dialog.
7. Select **OK** to complete the procedure.

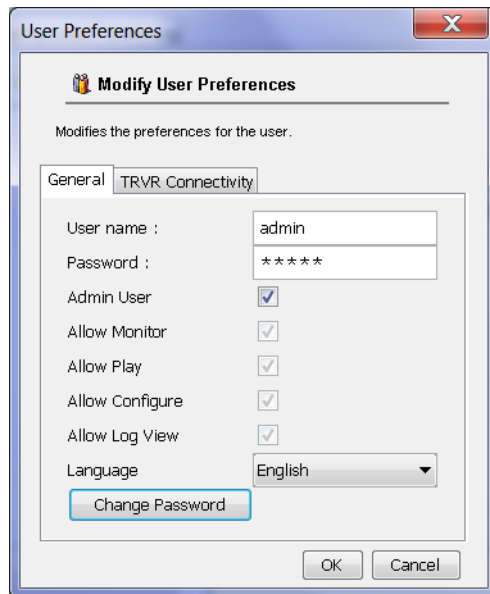
The user can now access Remote Manager with the new password.

## 5.7. Change Own Password

Every user can change their own password once they have access to Remote Manager. To change own password:

### *Change Own Password*

1. Select  on the button bar to display the Modify Users Preferences dialog. As an alternative select **Users Preferences...** from the **File** menu.



2. Select **Change Password** to display the Change User Password dialog:



3. Enter **Password** and **Confirm Password**. Both values must be the same.
4. Select **OK** to return to the Modify User Preferences dialog.
5. Select **OK** to complete the procedure.

You must use the new password to log in next time you run Remote Manager.

## 6. Application Configuration

For best results with Remote Manager, we recommended that you configure it as explained in this section before using it.

### 6.1. Configuration Location

Remote Manager stores its configuration and run-time database in a folder that you specify during the installation of the application. By default this location is:

- Windows 7 64 bit system: 'C:\Program Files (x86)\Common Files\TRVR Remote Manager'.
- All other systems: 'C:\Program Files\Common Files\TRVR Remote Manager'.

We recommended that you select a folder on the local drive of the PC that runs Remote Manager when choosing a location for the configuration. You must give read and write permissions to the folder to all Windows (not Remote Manager) users that will run Remote Manager on the PC.

It is not possible to use a common Remote Manager configuration for multiple PCs.



For example, it is not possible to place Remote Manager configuration in a shared folder and then run Remote Manager on multiple different PCs, all accessing the configuration in the shared folder.


Each PC must have its own Remote Manager configuration.

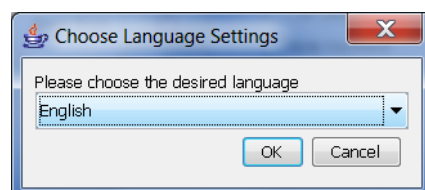
### 6.2. Display Language

Remote Manager uses the English language as a display language by default. However, each user can choose a different display language.

Administrators can specify the display language for users when they create the accounts for the users. Users can change this setting at any time.

#### *Change the Display Language*

1. Select  on the button bar to display the Choose Language dialog.



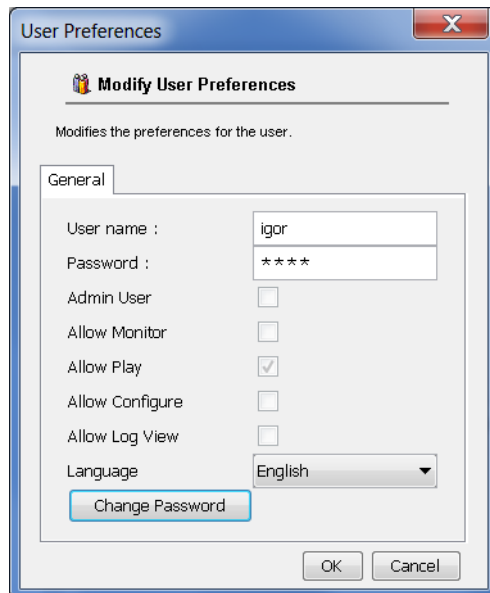
2. Choose a language.

3. Select **OK** to complete the procedure.

It is possible to change the display language from the Modify User dialog as well.

### *Change the Display Language – Alternate Method*

1. Select  on the button bar to display the User Preferences dialog. As an alternative select **User Preferences ...** from the **File** menu:



2. Choose **Language**.
3. Select **OK** to complete the procedure.

In both cases, Remote Manager will change its display language immediately. There is no need to restart the application.

## **6.3. Network Interface**

Remote Manager uses network connections to communicate with Total Recall VR systems.

If the PC that runs Remote Manager has a single network interface with a single IP address, which is true in most cases, then Remote Manager will automatically use the IP address assigned to the network interface. In addition, by default Remote Manager will use TCP ports 10001 and 10002.

If your machine has more than one network interface, or it has multiple IP addresses assigned to each interface, then you must configure Remote Manager with the IP address that it should use. This must be an IP address that Total Recall VR systems can connect to, based on the routing rules of your network.

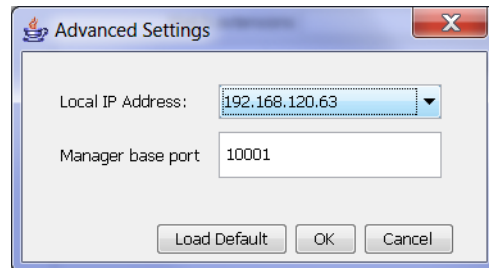


Also, you can change the default TCP ports that Remote Manager uses if the default ports are in use by other applications on the PC, or you prefer to use different ports in order to configure firewall rules.

To change the IP address and TCP ports:

### *Assign IP Address and TCP Ports*

1. From the File menu select **Advanced...** to display the Advanced Settings dialog:



2. Select **Local IP Address**. The list will contain all IP addresses that are assigned to the network interfaces on the PC.
3. Enter **Manager base port**. Note that Remote Manager will use two ports: the base port and base port + 1.
4. Select **OK** to complete the procedure.
5. Restart Remote Manager.

Remote Manager will use the new IP address and ports when it starts.

If the PC gets an IP address every time you start it, then:

1. If it has one network interface which receives only one IP address, then Remote Manager will automatically use the IP address that is assigned to the network interface.
2. If it has multiple interfaces, then you may have to perform the above procedure every time you start the PC.

## 6.4. Total Recall VR Connections



You must be an administrator user to perform the procedures in this section.

Administrators must define connections to Total Recall VR systems for each Remote Manager user with a User role individually.

While this appears to be a laborious process in the case of multiple users and multiple PCs running Remote Manager, the strategy offers the flexibility for fine grained control of access to Total Recall VR systems. Each Remote Manager user on every PC that is used to run Remote Manager can have different connections, and different restrictions for each connection, to Total Recall VR systems.

Administrators can define one of three different types of connections to Total Recall VR systems:

1. LAN – this type of connections requires a working TCP/IP network between the PC running Remote Manager and Total Recall VR systems.
2. Dialup – DO NOT USE.
3. Cascaded – DO NOT USE.



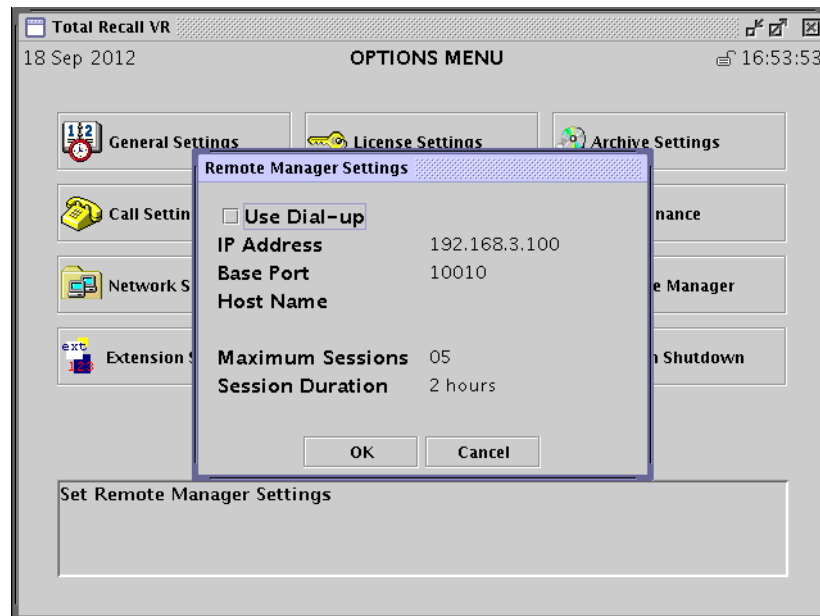
We recommend you use only LAN connections as the other two types are now considered obsolete and will be removed from future releases of Remote Manager.

To configure a connection for a Total Recall VR you must know the following information about the Total Recall VR:

1. The password of the Administrator, or the User, on the Total Recall VR.
2. The configuration of the Remote Manager Interface on the Total Recall VR system.

The default password for both users on Total Recall VR systems is 0000. Of course, it could be set to another value. Contact whoever is managing your Total Recall VR and obtain the correct password(s) from them.

You can determine (and if required, change) the configuration of the Remote Manager Interface on Total Recall VR systems with a built-in display from the Options Menu Screen. For example:




**Figure 8: Total Recall VR Remote Manager Interface Configuration**

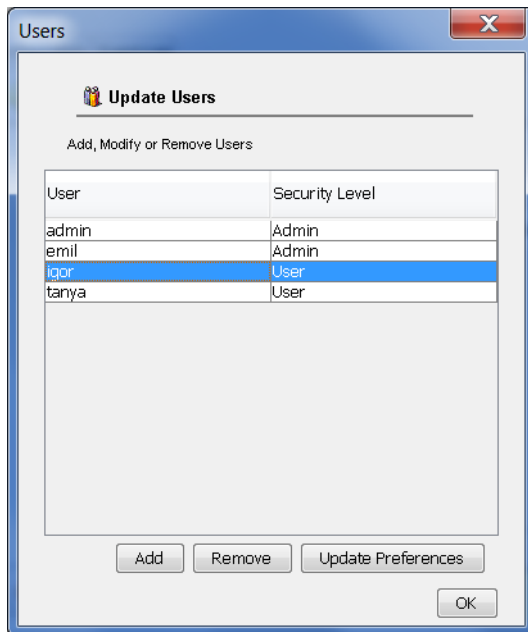
The Total Recall VR Embedded GUI User Guide [5] explains the Options Menu Screen and the configuration of the Remote Manager Interface in detail.

Total Recall VR systems which do not feature a built-in screen are configured to accept connections from Remote Manager on their LAN 1 network interface in the factory. The Remote Manager Interface on such systems accepts connections from Remote Manager on IP address 192.168.1.100 and port 10010. You must use this configuration to configure an initial connection which you can then use to change the configuration of Remote Manager Interface.

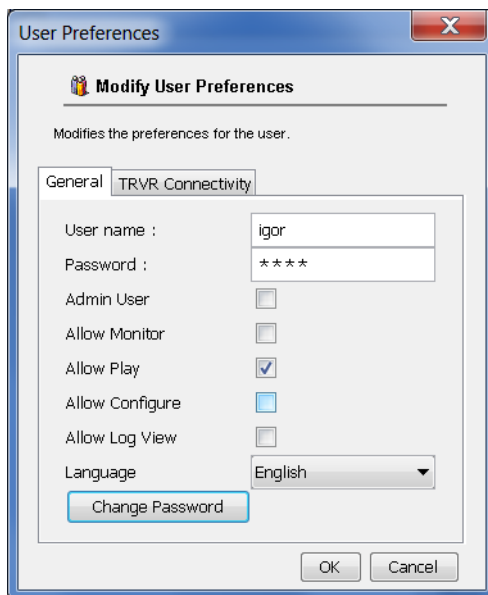
To configure a connection to a Total Recall VR system for a Remote Manager user:

***Create a Connection to a Total Recall VR for a User***

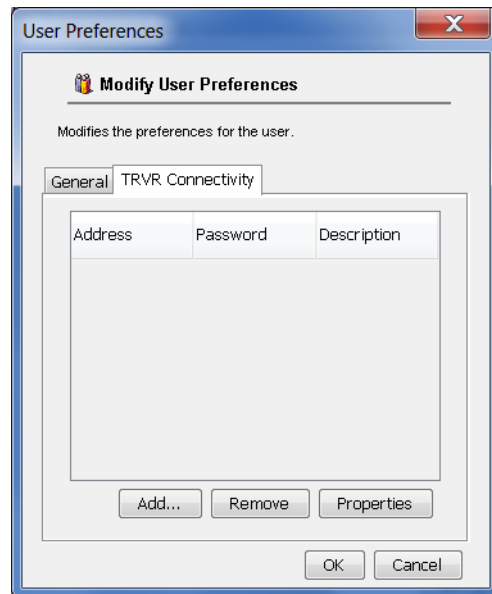
1. Select  on the button bar to display the Update Users dialog. As an alternative select **Users ...** from the **File** menu:



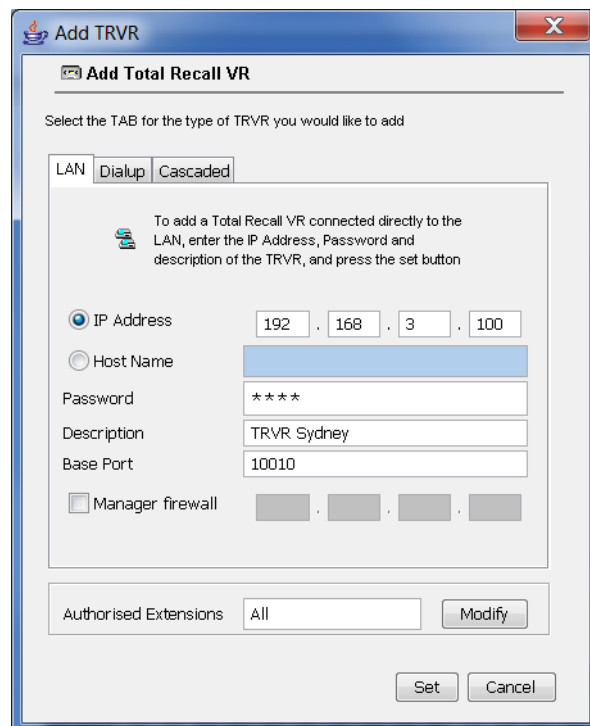
2. Select a user and then select **Update Preferences** to display the Modify User dialog:



3. Click on the TRVR Connectivity tab to show the list of connections to Total Recall VR systems. Of course, the list will be empty if you are creating the first connection for the user.



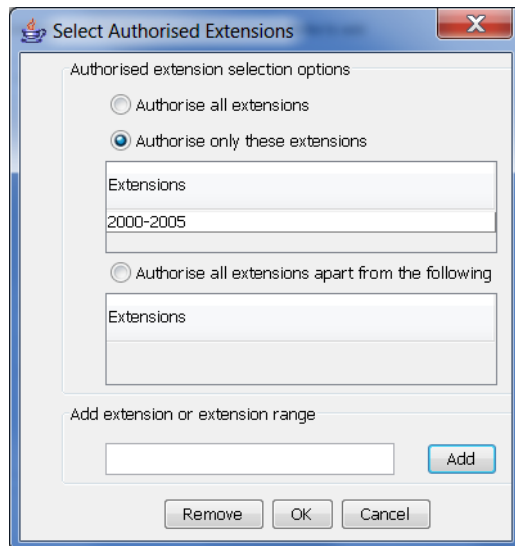
4. Select **Add** to display the Add Total Recall VR dialog:



5. Enter **IP Address**. This must be the IP address from the Remote Manager Interface configuration on the Total Recall VR.
6. Enter **Password**. This must be the password for the administrator user on the Total Recall VR.
7. Enter **Description**. This can be any text. It is used to identify the connection on all Remote Manager tabs.

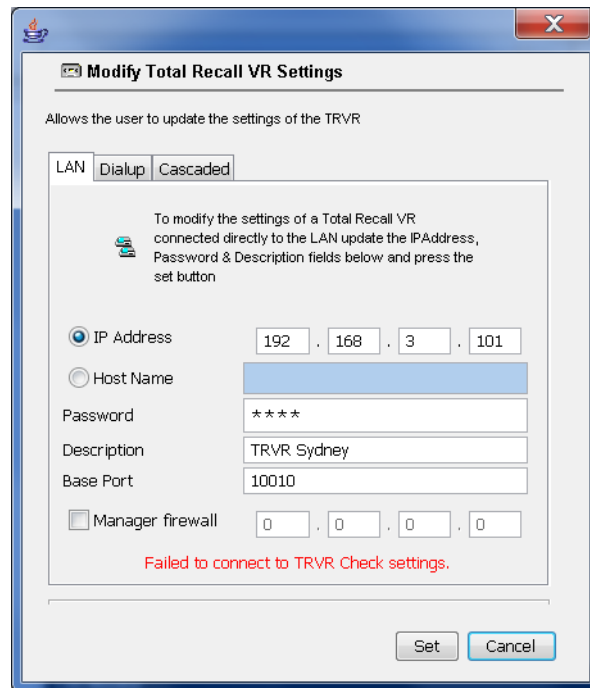
Do not leave this field blank if you are going to create multiple connections for the user.

8. Enter **Base Port**. This must be the base port from the Remote Manager Interface configuration on the Total Recall VR.
9. Optionally, create a set of **Authorised Extensions**. If you do, the user will be restricted to, or from, accessing recordings which have been assigned Total Recall VR Extensions that appear in the set when accessing the Total Recall VR.
  - a. To create the set, first select **Modify** to display the Authorised Extensions dialog:



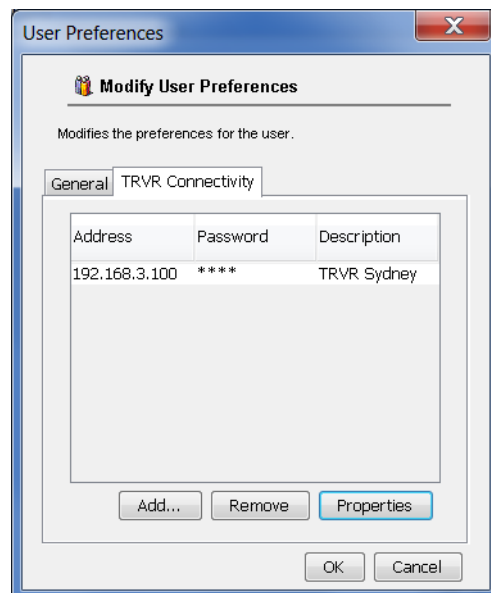
- b. Select one of the authorisation modes. They are exclusive, i.e. you can pick one only.
    - c. If you choose 'Authorise all extensions' no further action is required. Otherwise, specify individual extensions (for example 2000), or ranges (for example 2000-2005) and select **Add** to add them to the set.
    - d. When done, select **OK** to return to the Add Total Recall VR dialog. The set of authorised extensions will be shown as a value of **Authorised Extensions**.
10. Select **Set** to attempt a connection to the Total Recall VR. This is a network operation and may take some time to complete.

If Remote Manager fails to connect to the Total Recall VR, then it will show an error in the dialog (see red text):



In this case you have to correct the problem: configuration, networking etc. before you make another attempt to add the connection.


11. If Remote Manager successfully connects to the Total Recall VR, then it will display the connection in the list of connections for the user:

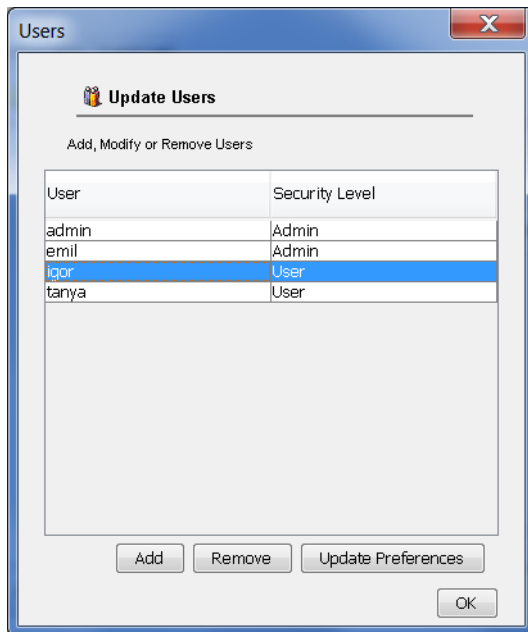


12. Repeat steps 4 to 11 to add more connections for the same user.
13. Select **OK** to close the Modify User dialog.
14. Select **OK** to complete the procedure.

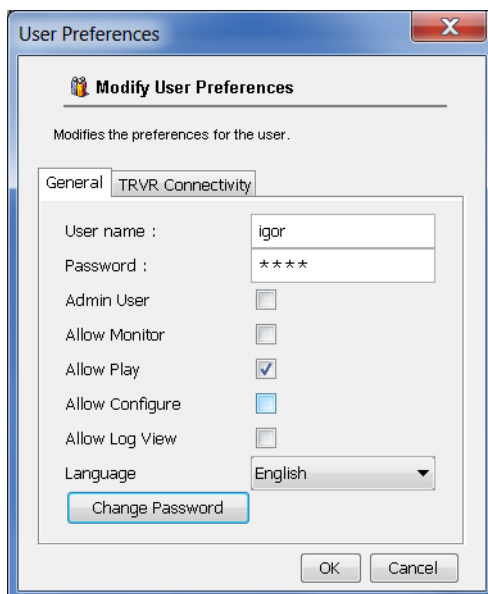
If you change the configuration of the Remote Manager Interface on a Total Recall VR system, then you must change the configuration of connections to that Total Recall VR in Remote Manager for all Remote Manager users.

### *Update a Connection to a Total Recall VR for a User*

1. Select  on the button bar to display the Update Users dialog. As an alternative select **Users ...** from the **File** menu

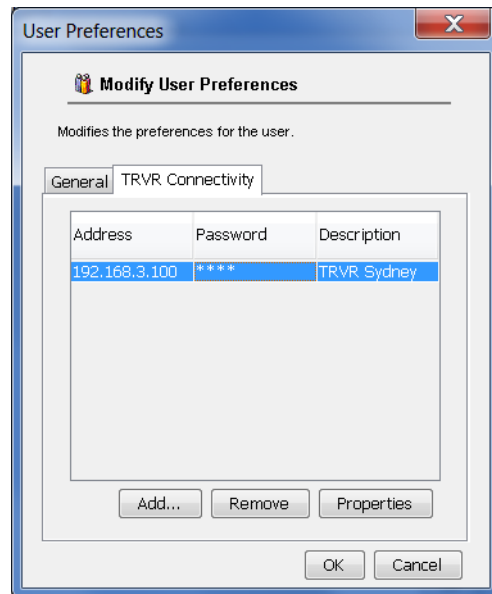


2. Select a user and then select **Update Preferences** to display the Modify User dialog

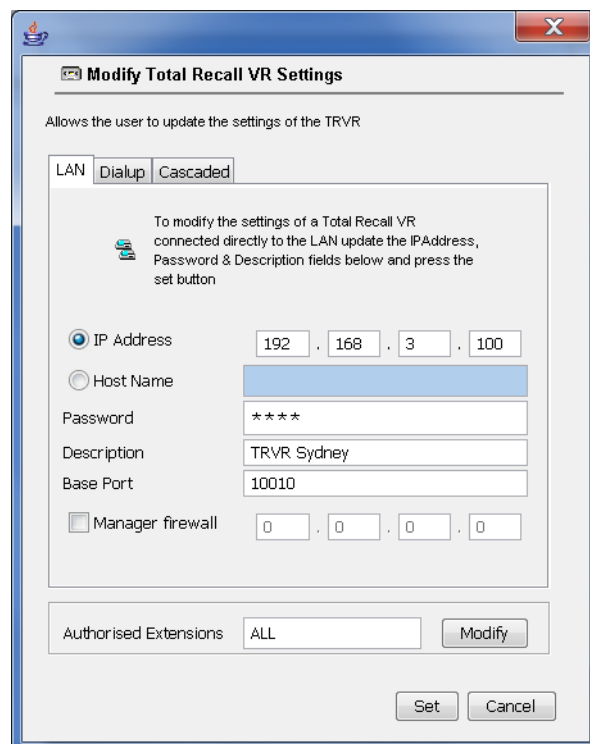


3. Click on the TRVR Connectivity tab to show the list of connections to Total Recall VR systems.





4. Select a connection and then select **Properties** to show the Modify Total Recall VR dialog:



5. Update the parameters as required and select **Set** to attempt a connection to the Total Recall VR with the new parameters.
6. From here on the behaviour of Remote Manager is the same as from step 10 in the *“Create a Connection to a Total Recall VR for a User”* procedure.

Note that network connections may take some time to complete (connect). The time it takes depends on the quality (speed, bandwidth, occupancy at time of connection, etc.) of your network.

## 6.5. CD, DVD or BD Drive

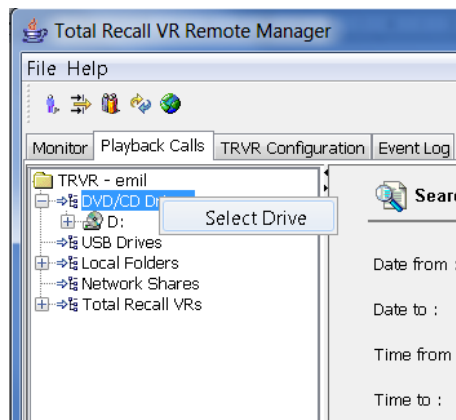
The Playback tab in Remote Manager makes provisions for searching and re-playing recordings that are stored in Total Recall VR archives which are stored on a CD, DVD or BD disc. Obviously, the PC which runs Remote Manager must have compatible CD, DVD or BD reading device in order to access such archives.

The Remote Manager installer automatically detects all CD, DVD and DB devices on the PC and automatically configures Remote Manager to use the first device it detects. If the system has multiple devices, then you can configure Remote Manager to use any of them.

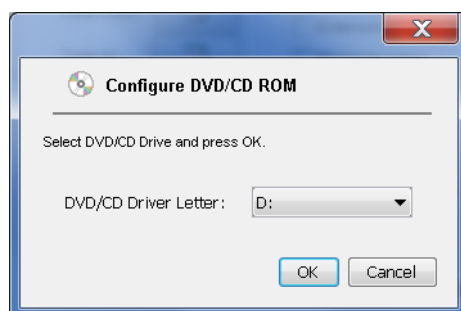
To do so open the Playback tab, and then:

### *Configure CD, DVD or BD Drive*

1. Right-click on the **DVD/CD Drives** tree item to display the context menu that is associated with the item:



2. Select **Select Drive** to display the Configure DVD/CD ROM dialog:



3. Choose **DVD/CD Drive Letter**. This should be the Windows drive assigned to the CD, DVD or DB device that you wish to use with Remote Manager.
4. Select **OK** to complete the procedure.

Now you can insert a CD, DVD or BD disc with a Total Recall VR archive on it and use the rest of the facilities provided by the Playback tab on it and the recordings in it.

## 6.6. USB Drive

The Playback tab in Remote Manager makes provisions for searching and re-playing recordings that are stored in Total Recall VR archives which are stored on a USB key or

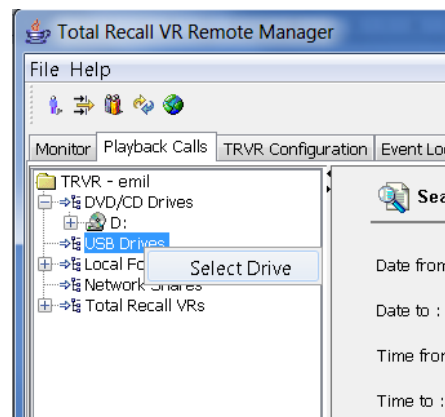
disk drive. Obviously, the PC which runs Remote Manager must have at least one USB 2.0, or 3.0, port in order to access such archives.

Remote Manager does not automatically detect USB keys or disk drives when they are connected to the PC that it runs on. Instead, you must tell Remote Manager which Windows drive is assigned to the key, or disk drive, that you connect.

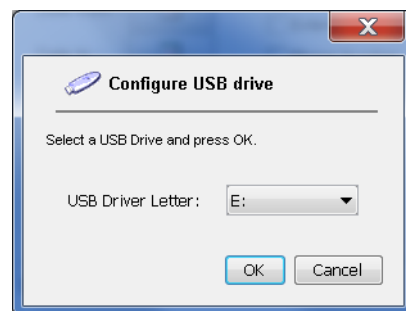
To do so open the Playback tab, and then:

### *Configure USB Drive*

1. Right-click on the **USB Drives** tree item to display the context menu that is associated with the item:



2. Select **Select Drive** to display the Configure USB Drive dialog:



3. Choose **USB Drive Letter**. This should be the Windows drive assigned to the USB key that you wish to use with Remote Manager.
4. Select **OK** to complete the procedure.

Usually you will perform the above procedure after you attach a USB key or disk drive to the PC. Windows will associate a drive with it and then you can use this drive to access the USB key or disk drive in Remote Manager.

However, if you keep re-using the same USB key or disk drive, then Windows will assign the same drive letter to it when you attach it, if the drive letter is available. So, if this is the case, then it is not necessary to perform the above procedure every time you attach the key or disk drive to the PC.

## 6.7. Local Folders

Remote Manager can create Total Recall VR archives in a Windows folder on the PC that it runs on. The Windows folder does not need to reside physically on the PC itself. It can be a folder that is on a shared drive as well.

Archives that are stored in local Windows folders are known as Local Folders in Remote Manager.

Such archives are useful if you wish to create a personal collection of recordings over time. The recordings can come from different Total Recall VRs or from different Total Recall VR archives. Archives in local Windows folders have the following advantages:

1. All facilities (search, playback ...) that are available on the Playback tab work on the archives and the recordings stored in them.
2. The recordings are stored in a proprietary and secure format.
3. You can add and remove recordings as you see fit.

Remote Manager allows multiple Local Folders for each Remote Manager user.



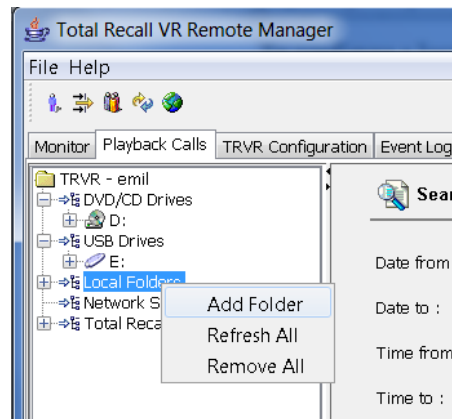
Local Folders are “local” to a PC in nature. It is not possible to simply copy the content of a Windows folder, which is a Local Folder in Remote Manager, to another PC and use the content as a Local Folder in Remote Manager on that PC.

The database that is associated with the archives in all Local Folders is part of the Remote Manager configuration. If you remove the Remote Manager configuration, then you will lose the database which will render archives in Local Folders useless.

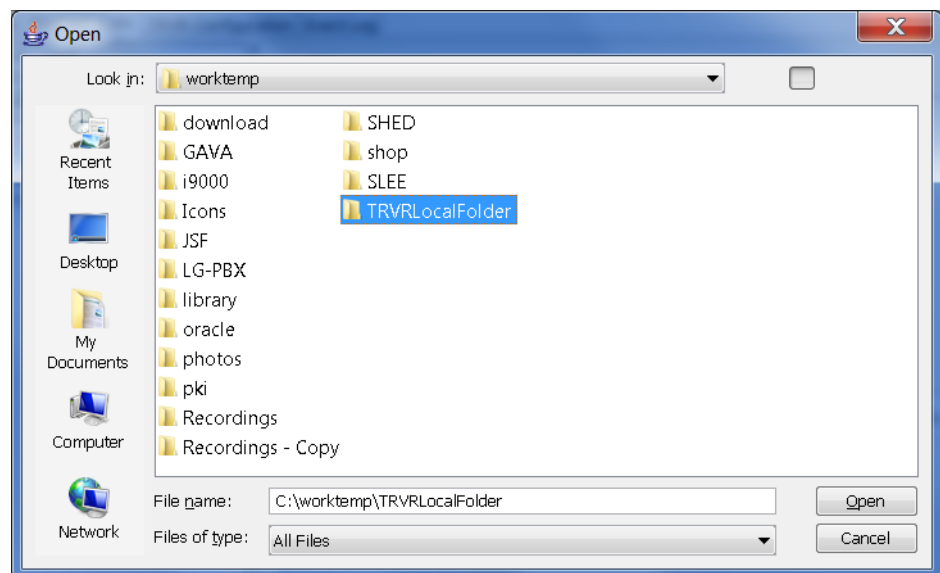
To configure a Local Folder, first create a folder on any Windows drive that is available on the PC, then open the Playback tab, and then:

### *Configure a Local Folder*

1. Right-click on the **Local Folders** tree item to display the context menu that is associated with the item:



2. Select **Add Folder** to open the standard directory browser dialog:



3. Navigate to and select the Windows folder that you wish to use as a Local Folder in Remote Manager.
4. Select **Open** to complete the procedure.

Now you can use the rest of the facilities provided by the Playback tab on the archive in the Local Folder and the recordings in it.

## 6.8. Network Shares

The Playback tab in Remote Manager makes provisions for searching and re-playing recordings that are stored in Total Recall VR archives which are located on Windows or Linux network drives.

Remote Manager requires a NFS client to access Linux network drives. If your PC is running Windows 7, then you must enable the NFS client that comes with it. Otherwise, you must obtain and install a 3<sup>rd</sup> party NFS client on the PC.



Avoid using the NFS client that comes with Windows Services for Linux if you can.

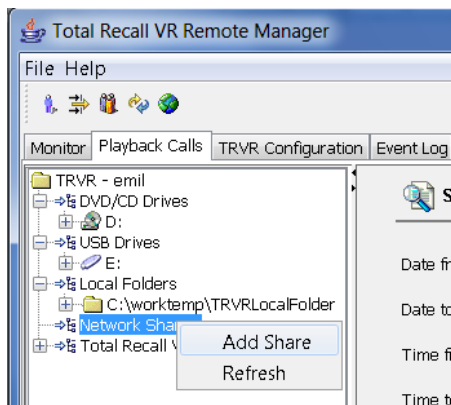
Remote Manager does not automatically detect network drives. Instead, you must tell Remote Manager which Windows or Linux drive to connect to. The network drives do not need to be attached to the PC as local drives. Remote Manager will access the network drives directly.

Remote Manager allows multiple Network Shares for each Remote Manager user.

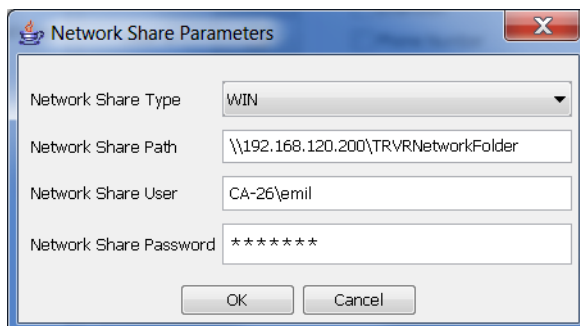
To configure a Network Share open the Playback tab, and then:

### *Configure a Network Share*

1. Right-click on the **Network Shares** tree item to display the context menu that is associated with the item:



2. Select **Add Share** to open the Network Share Parameters dialog:

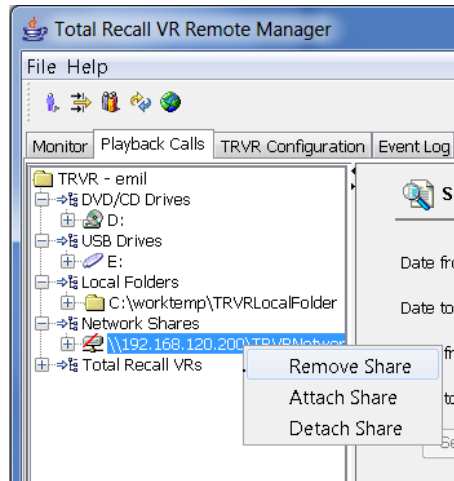


3. Choose **Network Share Type** and based on the type enter the path and access credentials.
4. Select **OK** to complete the procedure.

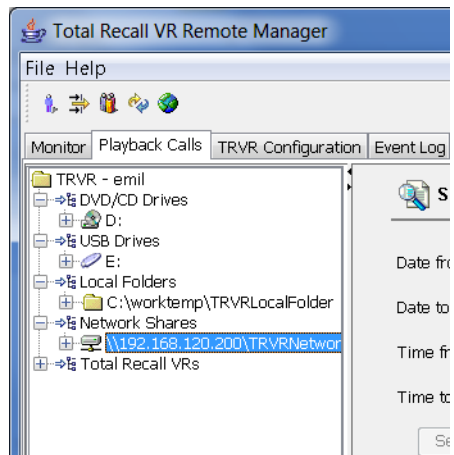
Remote Manager will remember the details, but it will not connect to the network drive immediately. To manage the connection to the network drive:

### *Attach/Detach a Network Drive*

1. Right-click on the share tree item to display the context menu that is associated with the item:



2. Select **Attach Share**. Remote Manager will connect to the network drive and display the  icon.

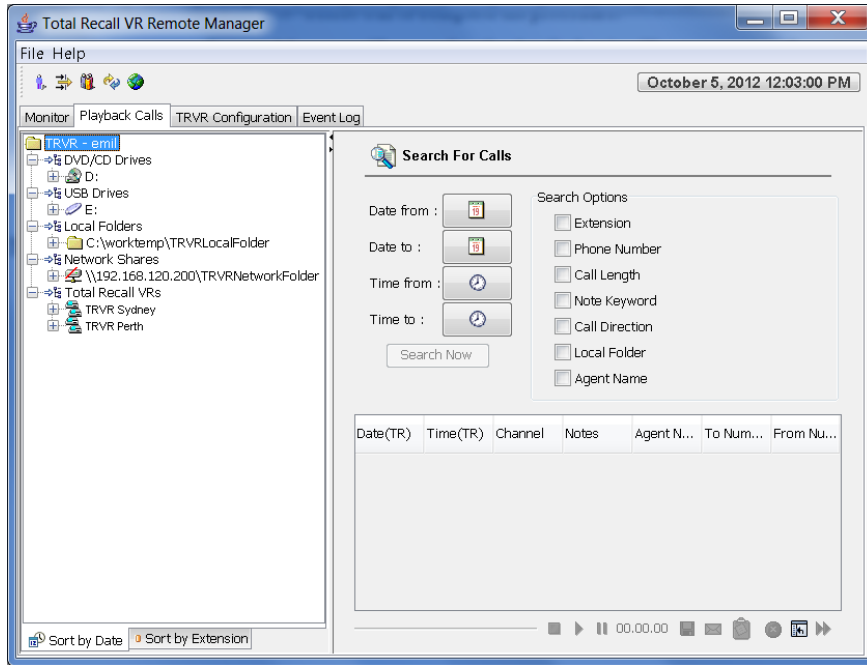


3. To disconnect from the drive, select **Detach Share** from the context menu.

Note that if you leave the Playback tab, then Remote Manager will automatically disconnect from all network drives. The same will occur if you exit Remote Manager.

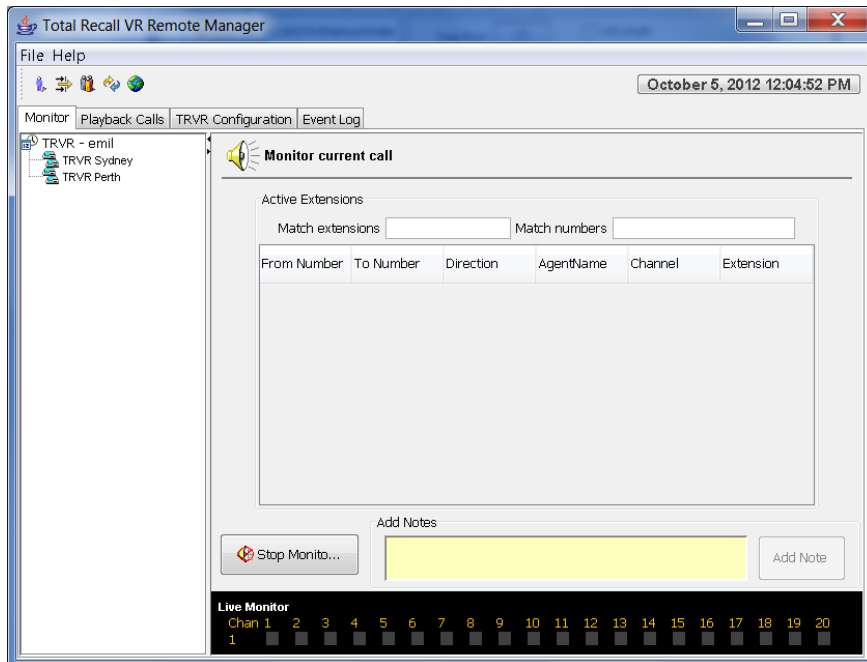
## 6.9. Configuration Summary

The following screen capture shows the Playback tab as it will appear if you complete the configuration procedures in this section.



**Figure 9: Playback Tab after Configuration**

All other tabs will show the Total Recall VR systems only. For example:



**Figure 10: Monitoring Tab after Configuration**



## 7. Monitoring

Remote Manager is capable of playing audio that it is being recorded, while being recorded (as it happens), on Total Recall VR systems.

Monitoring is limited to playing one recording in progress on one Total Recall VR at a time. For example, it is not possible to select multiple recordings in progress on a Total Recall VR and then play them all at the same time (mix and play). In addition, it is not possible to select multiple recordings in progress on different Total Recall VR systems and then play them at the same time (mix and play).

### 7.1. Monitoring Interface

Remote Manager uses the audio system of the PC that it runs on to play the audio of the recordings in progress. You must have speakers attached to the audio system as Remote Manager does not use the built-in PC speaker, if present.



If you start Remote Manager on a PC with incompatible audio system, then Remote Manager will report a “Monitoring Problem” when it starts. If you get this message, then Remote Manager will not be able to play audio that it is being recorded.

Remote Manager will report the same problem if you run multiple instances of it on the same PC. Only the first instance that you run will be able to use the audio system of the PC.

In addition, Remote Manager uses a TCP/IP network to stream audio that is being recorded from Total Recall VR systems to the PC that it runs on.



If you request to monitor a recording in progress and you receive a “Monitoring Problem” message, then Remote Manager is not able to stream audio from Total Recall VR systems to the PC that it runs on due to network problems.

You must resolve the problems, and restart Remote Manager, before making another attempt to play recordings in progress.

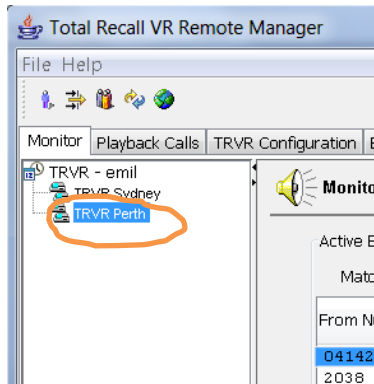
Section 6.3 Network Interface explains how to configure the IP address and TCP ports that Remote Manager uses to stream audio from Total Recall VR systems.



## 7.2. How to ...

To monitor recordings in progress, in real time, first navigate to the Monitoring tab. Then, to listen to the audio as it is being recorded:

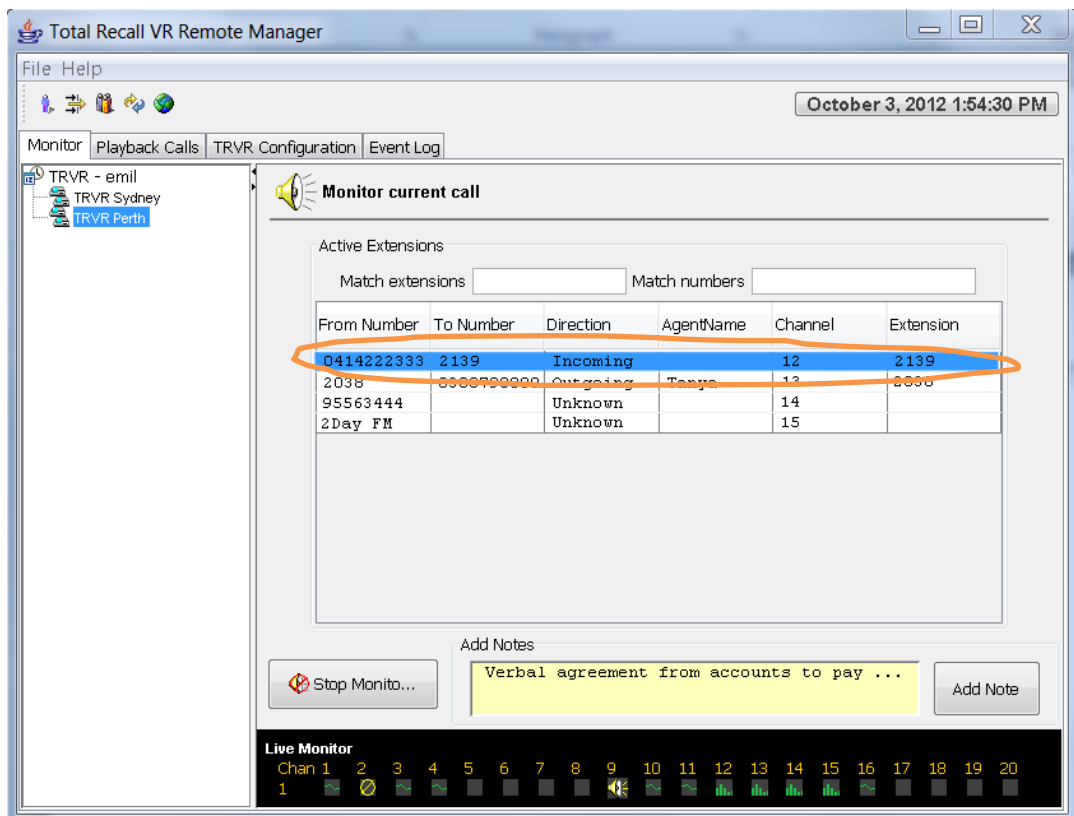
### *Monitor a Recording in Progress*

1. Select a Total Recall VR system:




Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Select (single click) a recording in progress.




3. Remote Manager will start playing the audio that is being recorded.

In addition, it will mark the recording channel that is used to record the audio with the  icon in the channel status area.



4. To stop monitoring select **Stop Monitoring** at any time.
5. Repeat steps 2 to 4 to listen to other recordings in progress on the same Total Recall VR.

Or, to listen to recordings on another Total Recall VR, repeat steps 1 to 4.

As an alternative you can use the channel status area to start monitoring on a specified analogue channel. Simply click on the channel icon if it is showing the  icon.

Remote Manager remembers the channel number of the recording channel when you start monitoring, but not stop it while recording is in progress. And if a new recording starts on the same recording channel, Remote Manager automatically start monitoring the new recording.

This is not useful for recordings on VoIP and ISDN recording channels as these recording channels are allocated dynamically to calls. However, it may prove very useful for recordings on analogue channels where one-to-one mapping exists between audio sources and recording channels.

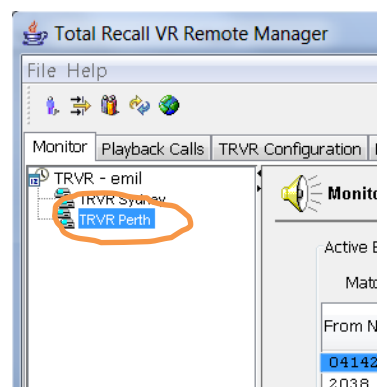
For example, if you start monitoring a recording in progress that is using analogue recording channel 1, and not stop it while it is in progress, then monitoring automatically starts when the next recording starts on analogue recording channel 1.



Unlike the Embedded GUI [1], Remote Manager makes provisions for adding notes to recordings in progress on the Monitoring tab.

To add a short note, up to 80 characters long, to a recording in progress:

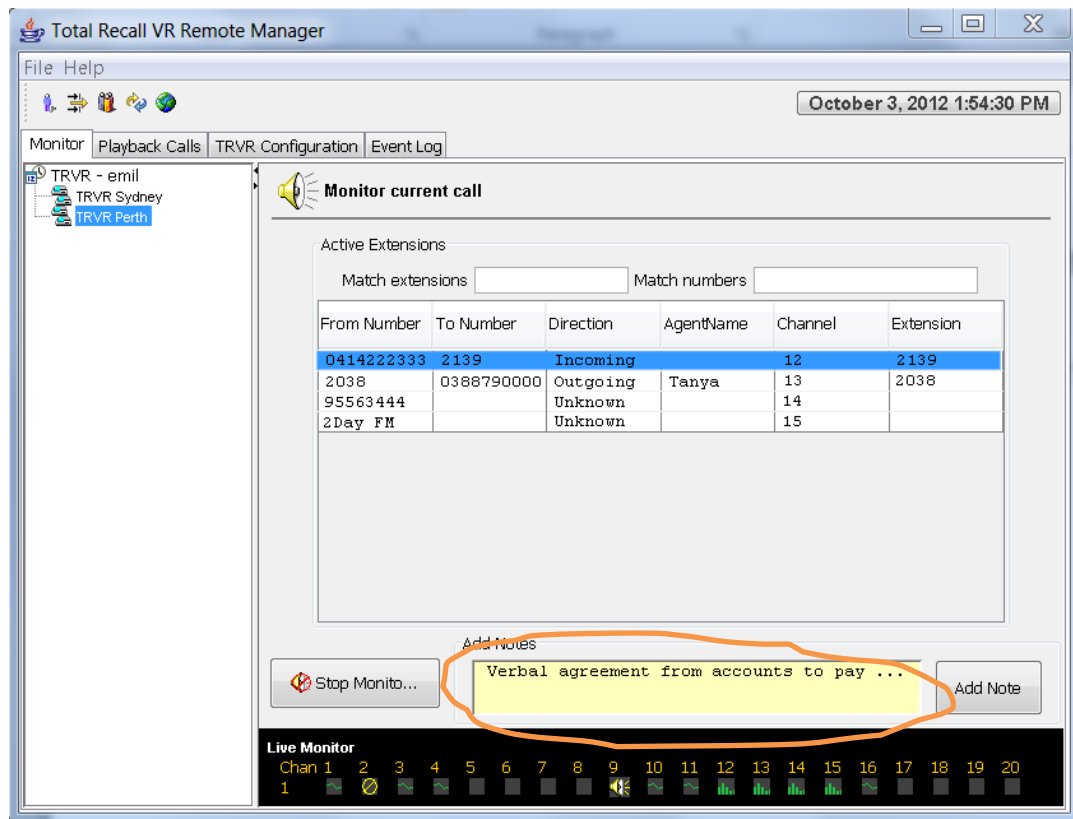
### ***Add a Note to a Recording in Progress***

1. Select a Total Recall VR system:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Select (single click) a recording in progress.
3. Write a short note in the notes area:



4. Select **Add Note**.
5. If you change your mind, or to correct the content of the note, simply repeat steps 3 to 4. Remote Manager will replace the previous note with the content of the new one.

You can filter the recordings that appear on the Monitoring tab by entering **Match extension** or **Match numbers**. For example:

- To show only recordings from and to Total Recall VR Extension 2006, enter *2006* as value for **Match extensions**. This filter looks for exact match.
- To show recordings to and from number 0210 456 789, enter *0210* as value for **Match numbers**. This filter looks for a partial match, so it will show recordings to any number that contains the specified value.

## 7.3. Configuration

### 7.3.1. Monitoring



Section 6.3 Network Interface explains how to configure the IP address and TCP port that Remote Manager uses to stream audio from Total Recall VR systems while monitoring.

### 7.3.2. Policies

A global recording policy and extension recording policies that are defined on Total Recall VR systems specify whether monitoring is allowed or not, globally or for specific Total Recall VR Extensions.



See section 11.3.7 Extension Settings for details on how to configure recording policies.

In addition, access to specific Total Recall VR extensions may be restricted by the configuration of connections to Total Recall VR systems.



See section 6.4 Total Recall VR Connections for details on how to configure connections to Total Recall VR systems and define allowed extensions for each connection.

## 8. Searching

Total Recall VR stores additional information on each recording along with the recording.

This information includes:

1. Start and end date and time of recordings.
2. Duration of recordings.
3. Total Recall VR Raw, Mapped and Extension identifiers for the source and destination of recordings (for example calling and called numbers for recordings of calls) – see section 2.4.1 Extensions for further details on these identifiers.
4. DTMF digits that are detected while recording.
5. Free-text notes.
6. Classification of telephone calls (incoming, outgoing, internal or unknown).
7. Flags which indicate whether recordings have been archived in the past or tagged for future operations.
8. Recording channel number.
9. Agent name.

This information is the backbone of a comprehensive search function which can locate individual recordings based on a number of criteria such as:

- Date and time of recording.
- Total Recall VR Raw, Mapped and Extension identifiers.
- Duration of recording.
- Call classification.
- DTMF digits.
- Keyword(s) in notes.
- Flags: archived and tagged recordings.

Remote Manager makes provisions for searching for recordings that reside on Total Recall VR systems and recordings that are stored in archives which are located on CD, DVD or BD discs, USB keys or disk drives, network drives and local folders.

When using Remote Manager, search criteria are limited to the following parameters:

- Date and time of recording.
- Total Recall VR Raw, Mapped and Extension identifiers.
- Recording duration.
- Keywords in notes.
- Call classification.
- Agent name.

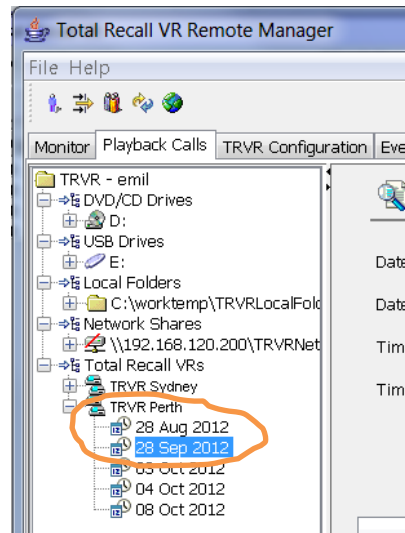
Use Total Recall VR Embedded GUI [5] if you wish to use other search parameters to define search criteria.




### 8.1. How to ...

To locate recordings that have completed, first navigate to the Playback tab. Then to find recordings:

#### *Search for Recordings*

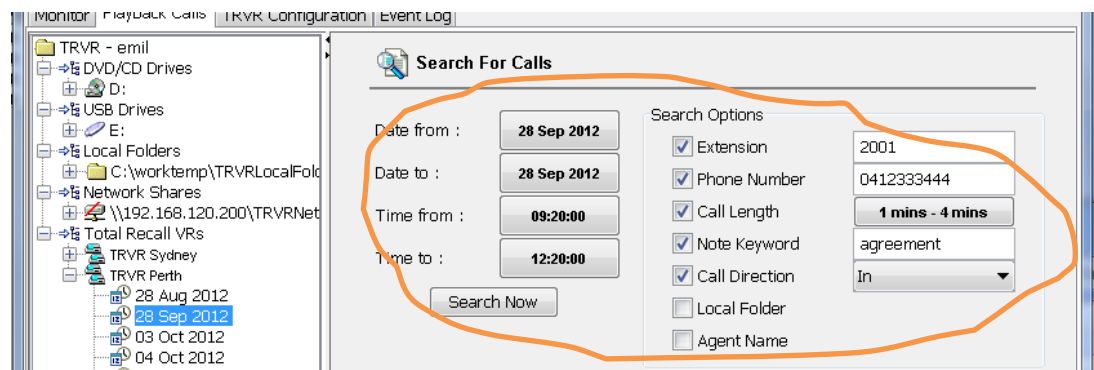
1. Select an archive or a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR. Also, make sure to attach network drives before initiating a search. Attached drives display the  icon.

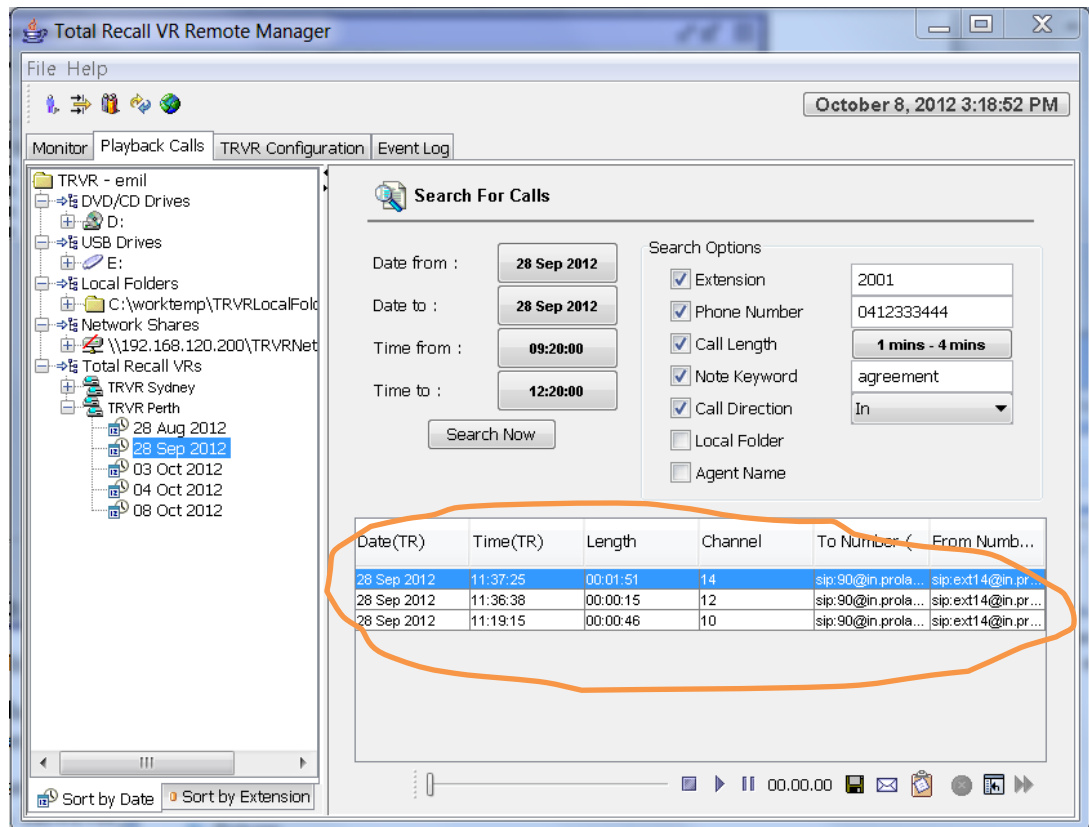
You can select a date or extension item as well under the archive or Total Recall VR. This automatically populates the date or extension search criterion.

2. Tick and enter values for parameters, in any combination, to include parameters in the criterion that will be used for the search. Only recordings that match the criterion will be selected by the search.





If you do not include any of the parameters in the criterion, then the criterion will match all recordings.

3. Select **Search Now**. The search will identify all recordings that match the search criterion and display them. For example:



The table will be empty if no recordings match the search criterion.

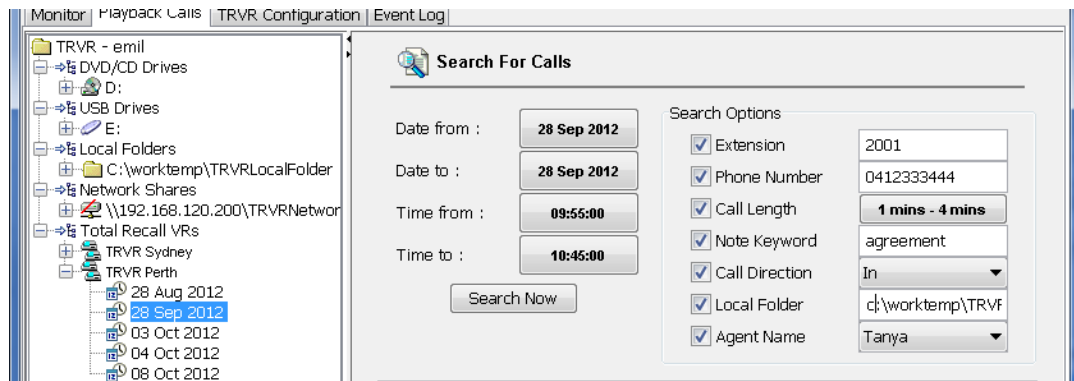
Note that the recordings are displayed sorted in reverse order of start time, i.e. latest recording on top.

4. If the search results in 50 recordings or less, then all recordings will be shown.
5. If the search results in more than 50 recordings, then the screen will display recordings in groups of 50. Select  to show younger recordings in groups of 50.
6. If you wish to see different information about the recordings, then select  to display a dialog which allows you to configure the columns of the table which displays the search result.
7. To perform another search, start from step 1.

## 8.2. Search Criteria Parameters

As the previous section explains, the Playback tab makes provisions that allow users to define search criteria.





**Figure 11: Playback Tab Search Parameters**

The individual parameters are:

### ***Date***

Use the ***Date from*** and the ***Date to*** parameter to identify recordings that started between the specified dates (inclusive).

### ***Time***

Use the ***Time from*** and the ***Time to*** parameter to identify recordings that started between the specified times (inclusive).

### ***Extension***

Use the ***Extension*** parameter to identify recordings with Total Recall VR Extension identifiers that match the specified value exactly.

### ***Phone Number***

Use the ***Phone Number*** parameter to identify recordings that *contain* the specified sequence of digits present in the Total Recall VR Mapped identifiers.

### ***Call Length***

Use the ***Call Length*** parameter to identify recordings with specified duration. The value is a range; for example between 1 minute and 4 minutes.

### ***Note Keyword***

Use the ***Note Keyword*** parameter to identify recordings that have the specified keywords in the notes.

### ***Call Direction***

Use the ***Call Direction*** parameter to identify recordings of telephone calls which were classified as specified by the value of the parameter.

### ***Local Folder***

Use the ***Local Folder*** parameter to specify the location of the local folder which contains the archive that you wish to search. This parameter is automatically populated when you select a local folder on the tree.

### *Agent Name*

Use the *Agent Name* parameter to identify recordings which were the result of calls to and from the specified agent.

## **8.3. Configuration**

### **8.3.1. Search**

Remote Manager does not have any search specific configuration.

### **8.3.2. Policies**

Access to specific Total Recall VR extensions may be restricted by the configuration of connections to Total Recall VR systems.



See section 6.4 Total Recall VR Connections for details on how to configure connections to Total Recall VR systems and define allowed extensions for each connection.

## 9. Playing

Remote Manager has an embedded audio player which is purpose built to play audio which is stored in *Total Recall VR (.trc)* files in one of the following media formats:

- HQVQ, 8000Hz, 7.9Kbps, mono.
- G.711 A-law, 8000Hz, 64Kbps, mono.
- G.711  $\mu$ -law, 8000Hz, 64Kbps, mono.
- SPEEX Q8, 8000Hz, 15Kbps, mono.
- AMBE, 8000Hz, 2450bps, mono.

Remote Manager makes provisions for playing recordings that reside on Total Recall VR systems and recordings that are stored in archives which are located on CD, DVD or BD discs, USB keys or disk drives, network drives and local folders.

Playing is limited to playing one recording at a time. For example, it is not possible to select multiple recordings on a Total Recall VR and then play them all at the same time (mix and play). In addition, it is not possible to select multiple recordings on different Total Recall VR systems and then play them at the same time (mix and play). The same rule applies to playing recordings that are stored in archives.

### 9.1. Player Interface

Remote Manager uses the audio system of the PC that it runs on to play the audio of the recordings. You must have speakers attached to the audio system as Remote Manager does not use the built-in PC speaker, if present.



If you start Remote Manager on a PC with incompatible audio system, then Remote Manager will report a “Monitoring Problem” when it starts. If you get this message, then Remote Manager will not be able to play audio.

Remote Manager will report the same problem if you run multiple instances of it on the same PC. Only the first instance that you run will be able to use the audio system of the PC.

In addition, Remote Manager uses a TCP/IP network to stream audio for recordings that are stored on Total Recall VR systems to the PC that it runs on.



If you request to play a recording and you receive a “Playing Problem” message, then Remote Manager is not able to stream audio from Total Recall VR systems to the PC that it runs on due to

network problems.

You must resolve the problems, and restart Remote Manager, before making another attempt to play recordings.

Section 6.3 Network Interface explains how to configure the IP address and TCP ports that Remote Manager uses to stream audio from Total Recall VR systems.

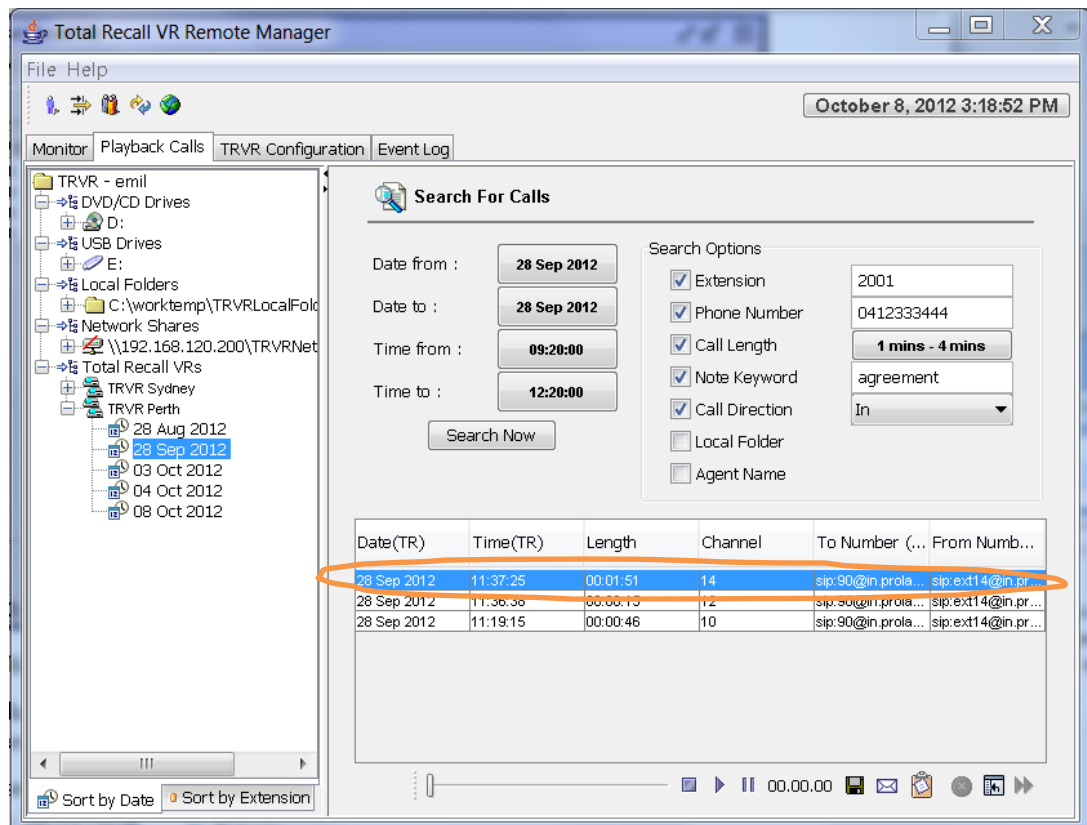
## 9.2. How to ...





To play a recording that has completed, first navigate to the Playback tab and then search for it. Section 8 Searching explains searching in detail.

Once you have located the recording:

### *Playing a Recording*

1. Select the recording that you wish to listen to:



2. Select  to start playing. Audio will be heard from the speakers that are attached to the PC and the actual time of recording will be shown as playing progresses right next to the  button.
3. While playing is in progress you can use  to pause playing.
4. Select  to stop playing.
5. Repeat steps 1 to 4 to play other recordings.

Note that if you navigate away from the Playback tab while play is in progress, then Remote Manager will automatically stop the play. You must remain on the Playback tab in order to play recordings.

### **9.3. Configuration**

#### **9.3.1. Playing**

Remote Manager does not have any play specific configuration.

#### **9.3.2. Policies**

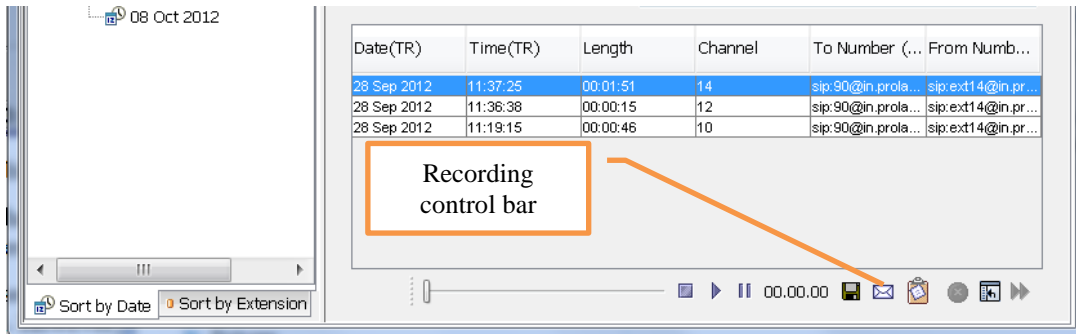
Access to specific Total Recall VR extensions may be restricted by the configuration of connections to Total Recall VR systems.








See section 6.4 Total Recall VR Connections for details on how to configure connections to Total Recall VR systems and define allowed extensions for each connection.

## 10. Recording Management

The recording control toolbar on the Playback tab makes provisions for managing recordings.



*Figure 12: Recording Control Toolbar*

Section 9 Playing explains how to use the player control buttons: , , . Section 8 Searching explains how to use the table control buttons:  and .

This section covers the rest of the buttons.

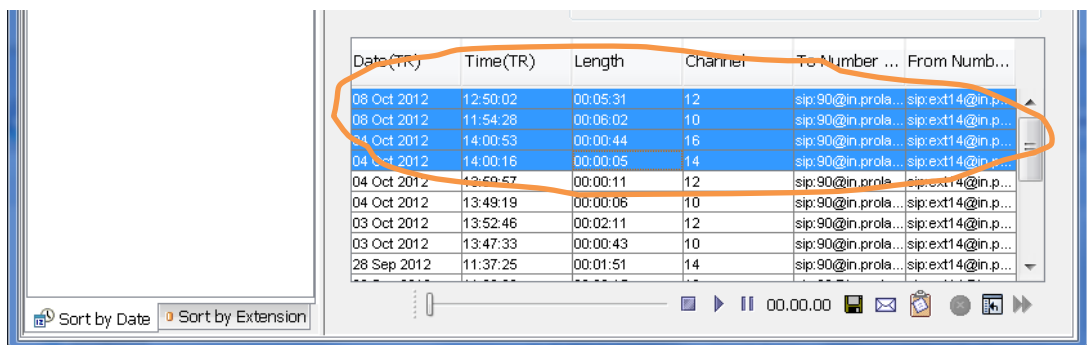
### 10.1. Saving Recordings


To save copies of recordings, first navigate to the Playback tab and then search for them. Section 8 Searching explains searching in detail.

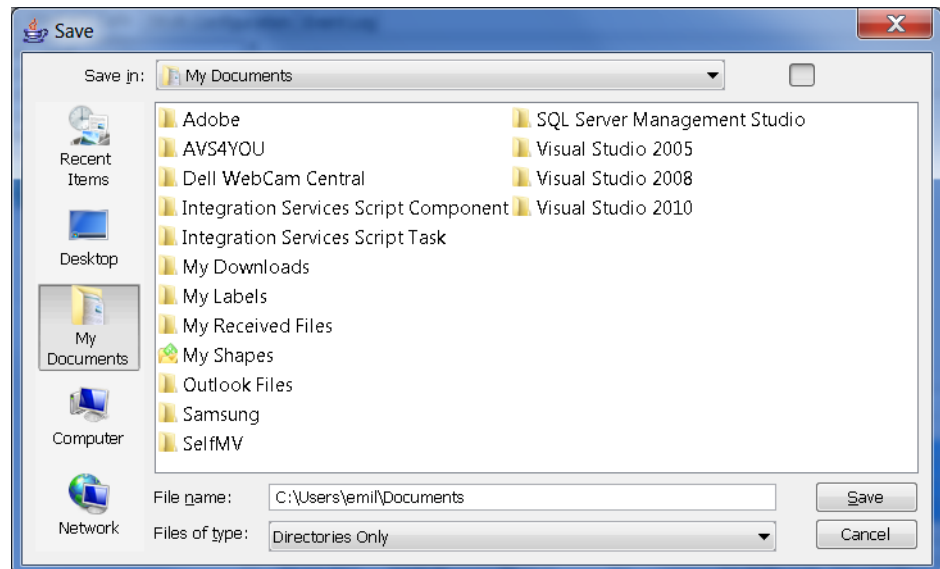
Once you have located the recordings:

#### *Save Copies of Recordings*

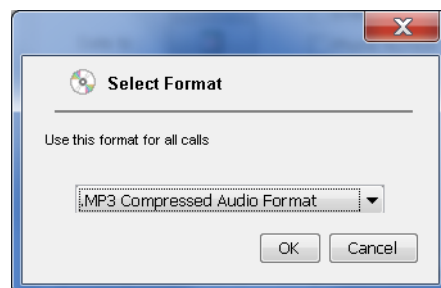
1. Select one or multiple recordings:



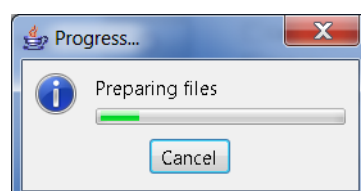
2. Select  to display the directory selection dialog:



3. Select a directory where you wish to place the copies of the recordings.
4. Select **Save** to display the Select Format dialog:



5. Choose the format that you wish to use for the copies of the recordings:
  - .TRC Total Recall VR Compressed Format – choose this format if you wish to keep the copies in the same format as the original recordings.
  - .MP3 Compressed Audio Format – choose this format if you wish to create copies in the MP3 format. The copies will be stored in MP3 files with audio in the *MPEG Audio Layer-3 (MP3), 8000Hz, 24Kbps, mono* format.
  - .WAV Audio Uncompressed Format – choose this format if you wish to create copies of recordings in the PCM format. The copies will be stored in WAV files with audio in the *PCM (raw) signed 16 bit, 8000Hz, 128Kbps, mono* format.
6. Select **OK** to initiate the operation. Remote Manager will display a progress dialog:



- The dialog will disappear from the screen when the operation completes.

The copies will be placed in the directory that you select during step 3 of the procedure. Use the Windows file explorer to navigate to the directory to access the copies.

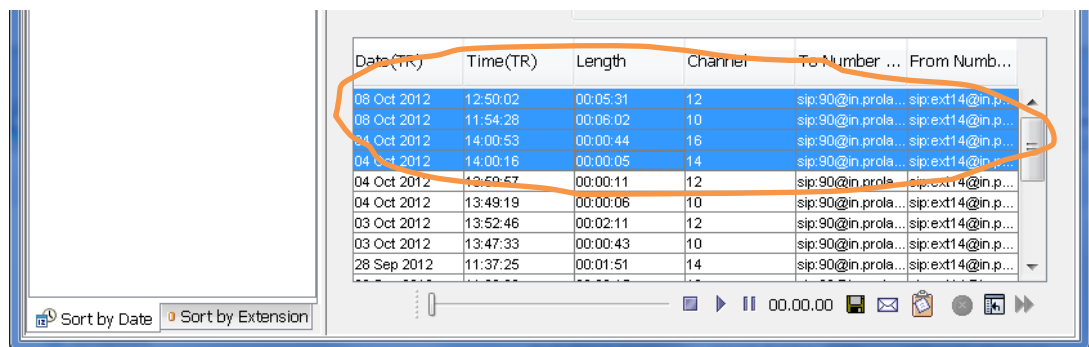
## 10.2. E-Mailing Recordings


To e-mail copies of recordings, first navigate to the Playback tab and then search for them. Section 8 Searching explains searching in detail.

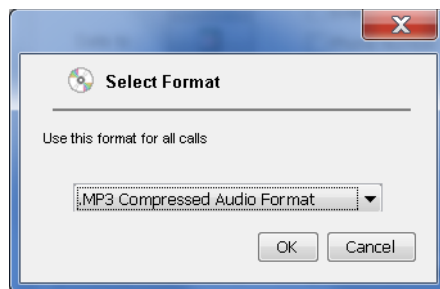
Once you have located the recordings:

### *E-Mail Recordings*

- Select one or multiple recordings:

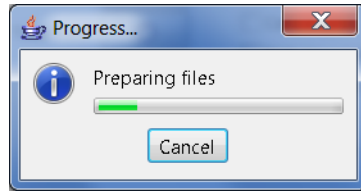


- Select  to display the Select Format dialog:

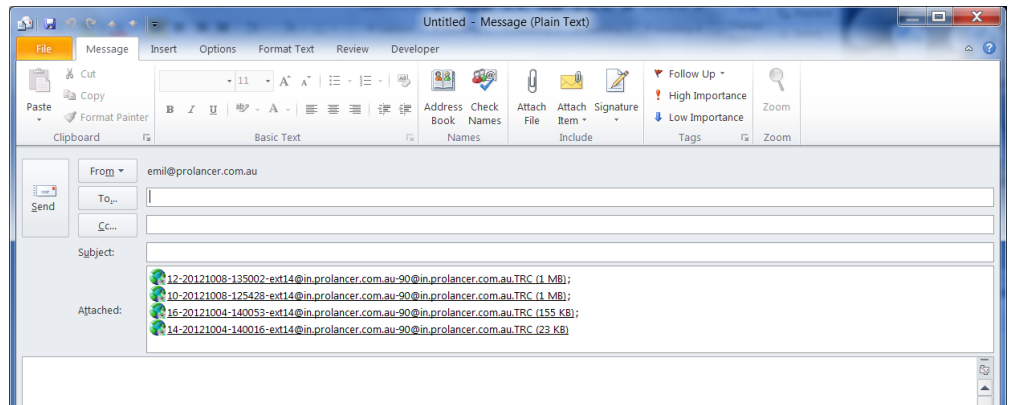


- Choose the format that you wish to use for the copies of the recordings:
  - .TRC Total Recall VR Compressed Format – choose this format if you wish to e-mail the recordings in the original format.
  - .MP3 Compressed Audio Format – choose this format if you wish to send copies of the recordings in the MP3 format. The copies will be stored in MP3 files with audio in the **MPEG Audio Layer-3 (MP3), 8000Hz, 24Kbps, mono** format.
  - .WAV Audio Uncompressed Format – choose this format if you wish to e-mail copies of recordings in the PCM format. The copies will be stored in a WAV file with audio in the **PCM (raw) signed 16 bit, 8000Hz, 128Kbps, mono** format.
- Select **OK** to initiate the operation. Remote Manager will display a progress dialog:





- When complete, Remote Manager will display an e-mail message dialog (from your default e-mail client) which will have copies of the recordings as attachments:



- Complete the message and send it.

Remote Manager uses the default e-mail client to compose the message. If you wish to use a different client, then first save copies of recordings and then use the client of your choice to create a message.

### 10.3. Annotating Recordings

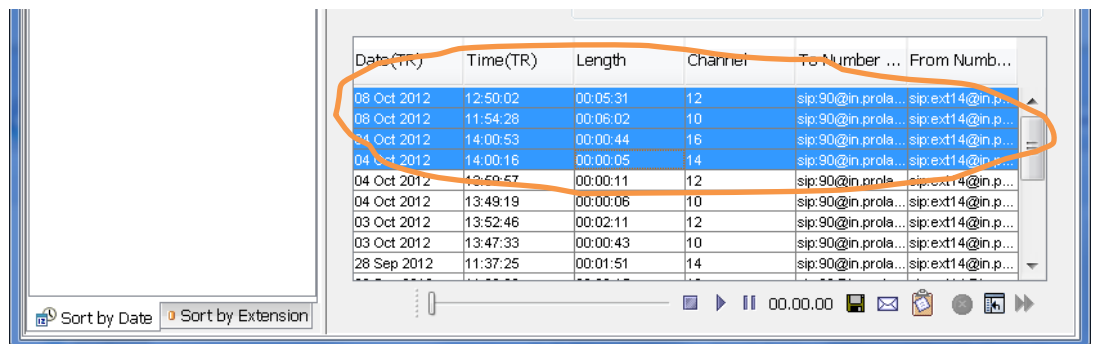
Remote Manager makes provisions for adding short notes to recordings that are stored on Total Recall VR systems and different types of archives, except archives that are stored on CD, DVD and DB discs.

To add notes to recordings, first navigate to the Playback tab and then search for them. Section 8 Searching explains searching in detail.

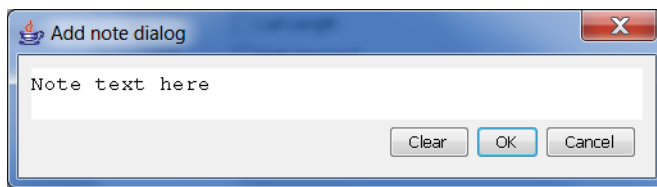
Once you have located the recordings:

#### *Annotate Recordings*

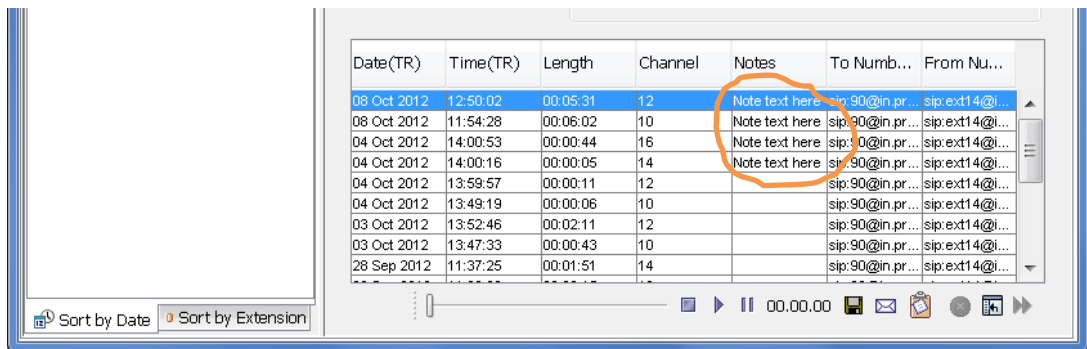
- Select one or multiple recordings:



2. Select  to display the Add Note dialog:



3. Type the note and then select **OK**.
4. Remote Manager will attach the same note to all recordings that are selected:



5. If you wish to remove notes from recordings, then clear the content of the Add Note dialog and select **OK**.

It is not possible to add notes to recordings that are stored in archives on CD, DVD and DB discs.

#### 10.4. Deleting Recordings

Remote Manager makes provisions for deleting recordings that are stored in local folders.



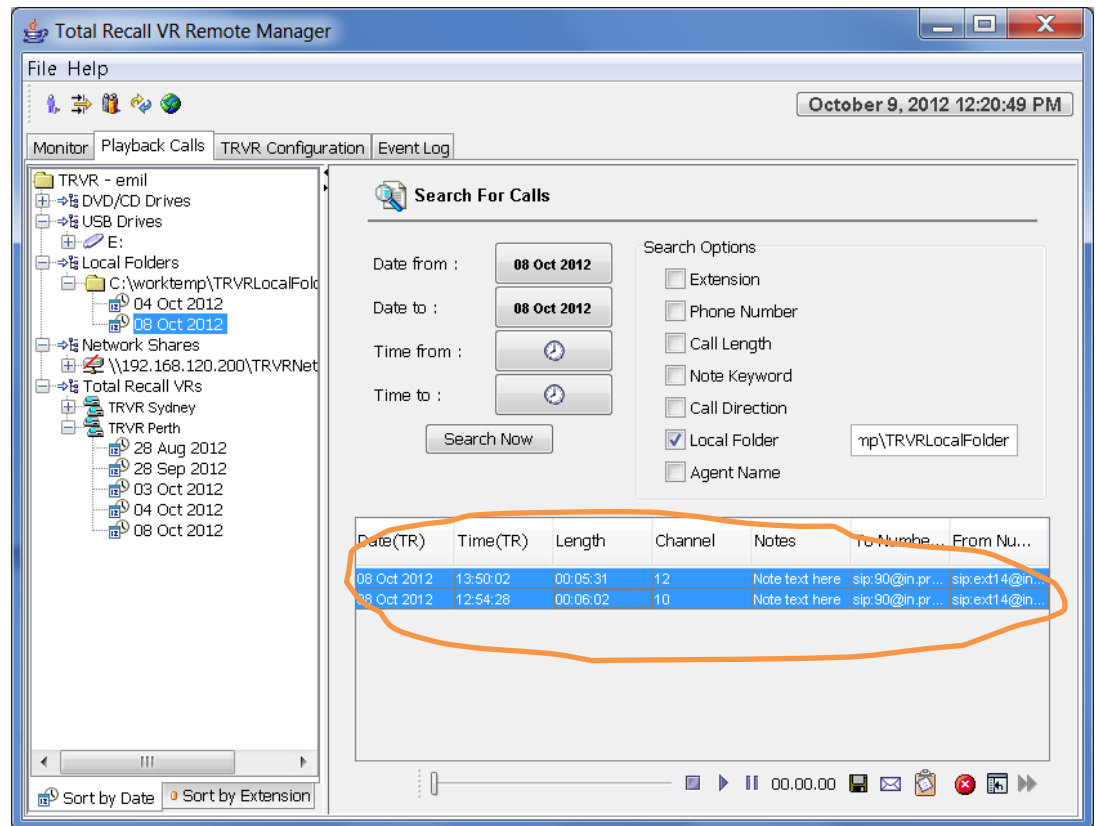
It is not possible to delete recordings on Total Recall VR systems and other types of archives with Remote Manager.

To delete recordings, first navigate to the Playback tab and then search for them. Section 8 Searching explains searching in detail.


Once you have located the recordings:

##### *Delete Recordings*

1. Select one or multiple recordings:



2. Select  to delete the recordings.

The action is immediate. Remote Manager will not ask you to confirm when you select .

## 11. Total Recall VR Configuration Management

Remote Manager makes provisions for direct access to the configuration of Total Recall VR systems on the Configuration tab.



Only administrators should have access to the Configuration tab.

All changes are applied directly to the Total Recall VR systems. Remote Manager does not store a local copy of the configuration. Exercise caution when using the facilities provided by this tab. As a safety precaution, do not allow access to this tab to users that do not need to have access to the configuration of Total Recall VR systems.

### 11.1. Access Control

#### 11.1.1. Passwords

Total Recall VR has a role based access control mechanism. Two roles exist and one user in each role. The roles are:

1. Administrator – the user in this role is allowed to access all functions of the system.
2. User – the user in this role is restricted to monitoring, searching, playing and archiving.



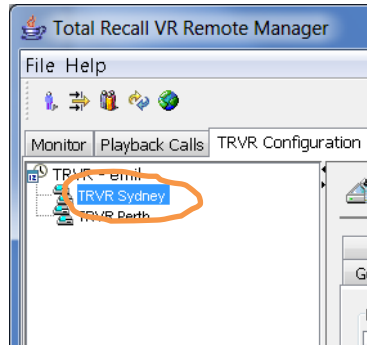
It is not possible to add additional users in any of the roles at this stage.

Total Recall VR decides which user is accessing the system by comparing the password presented by the user at start of a user session with the Administrator and User passwords stored in its configuration. By default, both passwords are 0000.

To change the passwords:

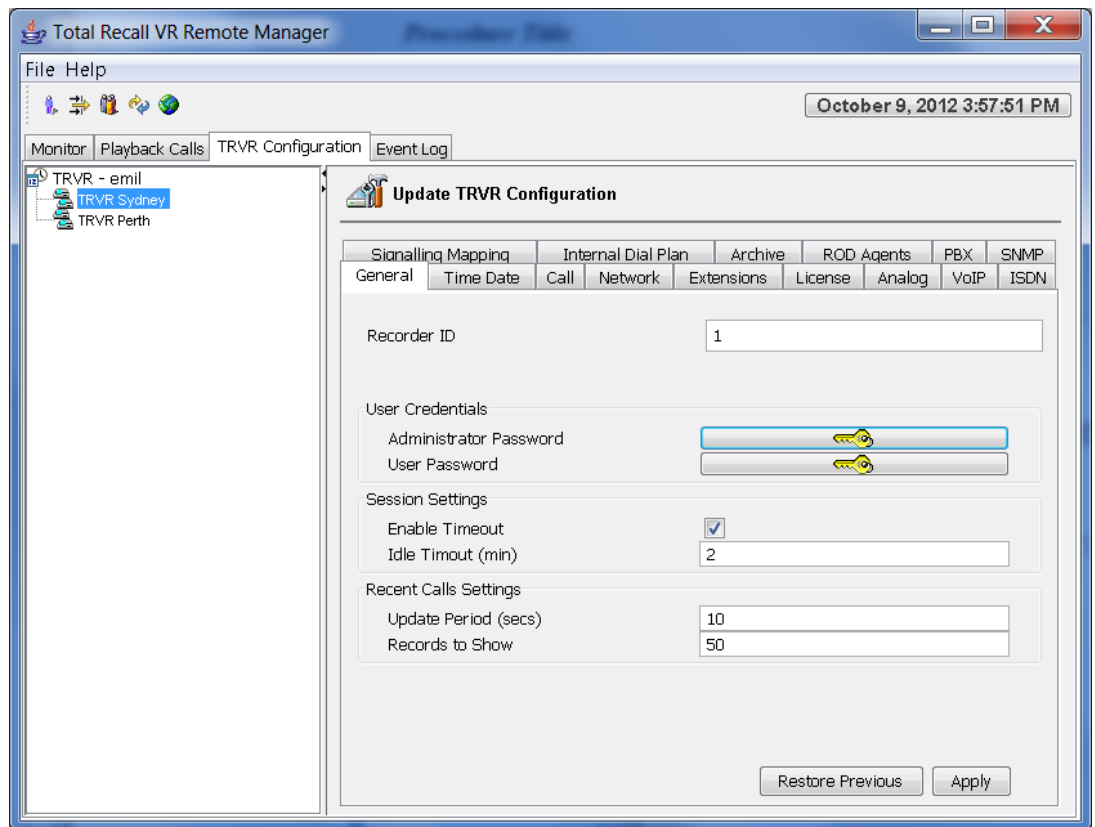
#### *Change the Administrator and User Passwords*

1. Select a Total Recall VR:

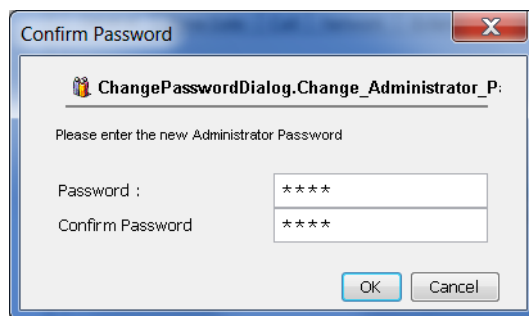


Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the General tab:

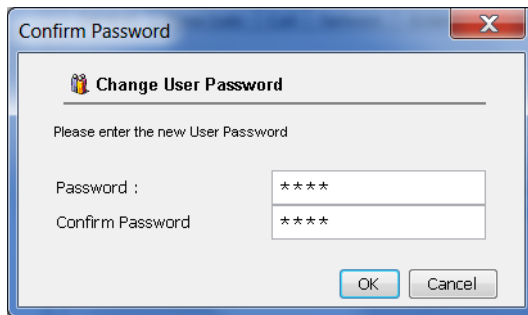


3. Select **Administrator Password** to display the password change dialog:



4. Enter **Password** and **Confirm Password**. Both must be the same.

5. Select **OK**. Remote Manager does not actually update the configuration of the Total Recall VR at this stage. It only remembers the new parameters.
6. Select **User Password** to display the password change dialog:



7. Select **OK**. Remote Manager does not actually update the configuration of the Total Recall VR at this stage. It only remembers the new parameters.
8. Select **Apply** to update the configuration of the Total Recall VR.
9. Alternatively, select **Restore Previous** to discard all changes.

### 11.1.2. User Sessions

User sessions are periods of time during which a user interacts with a Total Recall VR through the embedded GUI.

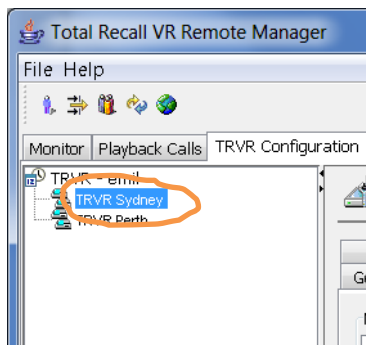
The user session parameters define what happens to user sessions after a period of inactivity. A period of inactivity is a continuous period of time during which a user does not press any key on the control keypad while a user session is in progress.



By default, user sessions “expire” after a period of inactivity of 2 minutes. The system will automatically end the current user session, lock the control keypad and lock the disc drive when a user session “expires”.

User session parameters define the inactivity period as well as whether user sessions “expire” or not.

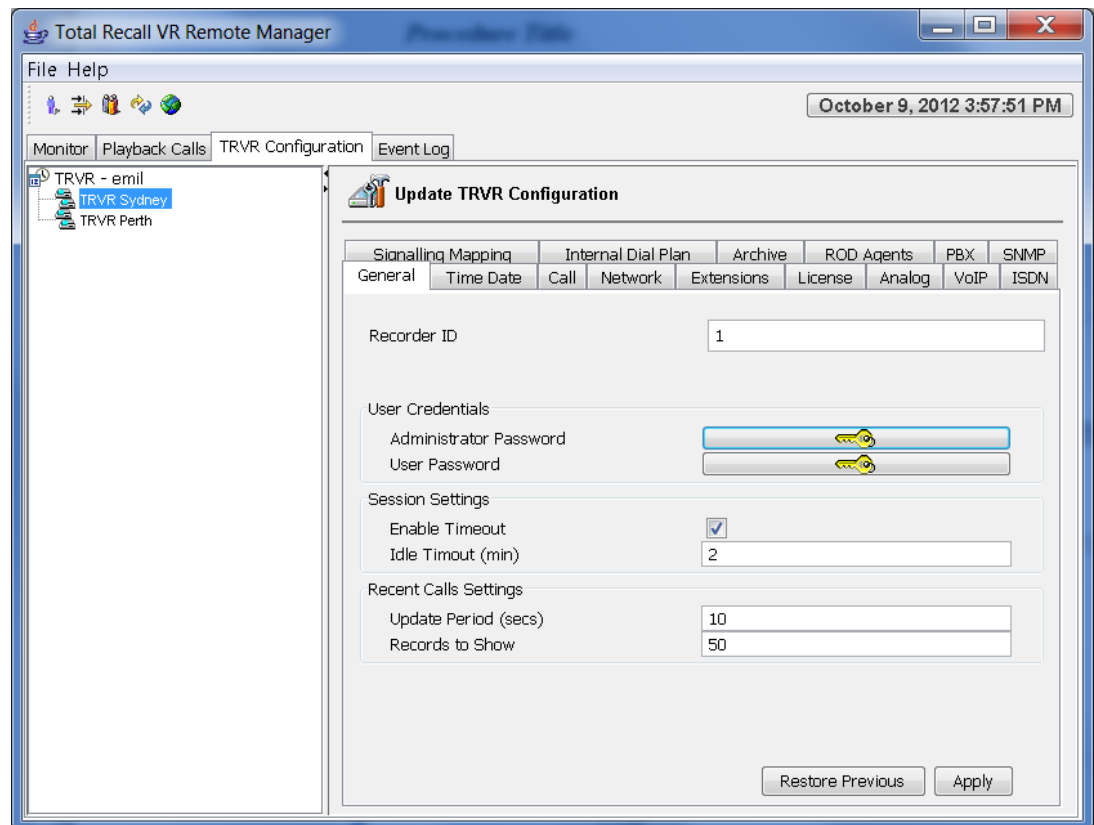
#### *Update User Session Parameters*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the General tab:



3. Tick or un-tick **Enable Timeout** to enable or disable session timeout.
4. If you tick **Enable Timeout**, then specify an **Idle Timeout** which can be between 1 and 10 minutes (inclusive).
5. Select **Apply** to update the configuration of the Total Recall VR.
6. Alternatively, select **Restore Previous** to discard all changes.

The new user session parameters take effect immediately. They apply to all current user sessions as well.

## 11.2. Initial Configuration

For best results with Total Recall VR, we recommended that you use Remote Manager to check and modify some of the system configuration as described in this section BEFORE starting to record calls.

### 11.2.1. Network Configuration

In most cases Total Recall VR will connect to an enterprise network (a.k.a. enterprise LAN).

It is recommended to configure the LAN 1 interface for connection to an enterprise network. This leaves the LAN 2 interface to the VoIP channels (see the Total Recall VR deployment guide [4] for more details) which is used to record VoIP calls.

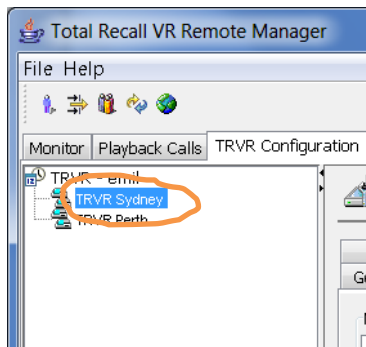
The following table shows the default configuration of the two LAN interfaces.



Parameter	LAN 1	LAN 2
IP Address	192.168.1.100	192.168.2.100
Netmask	255.255.255.0	255.255.255.0
VLAN ID	Not set	Not set

To change the configuration of the LAN 1 or LAN 2 interface first navigate to the Configuration tab and then:

### *Change the Configuration of a LAN Interface*

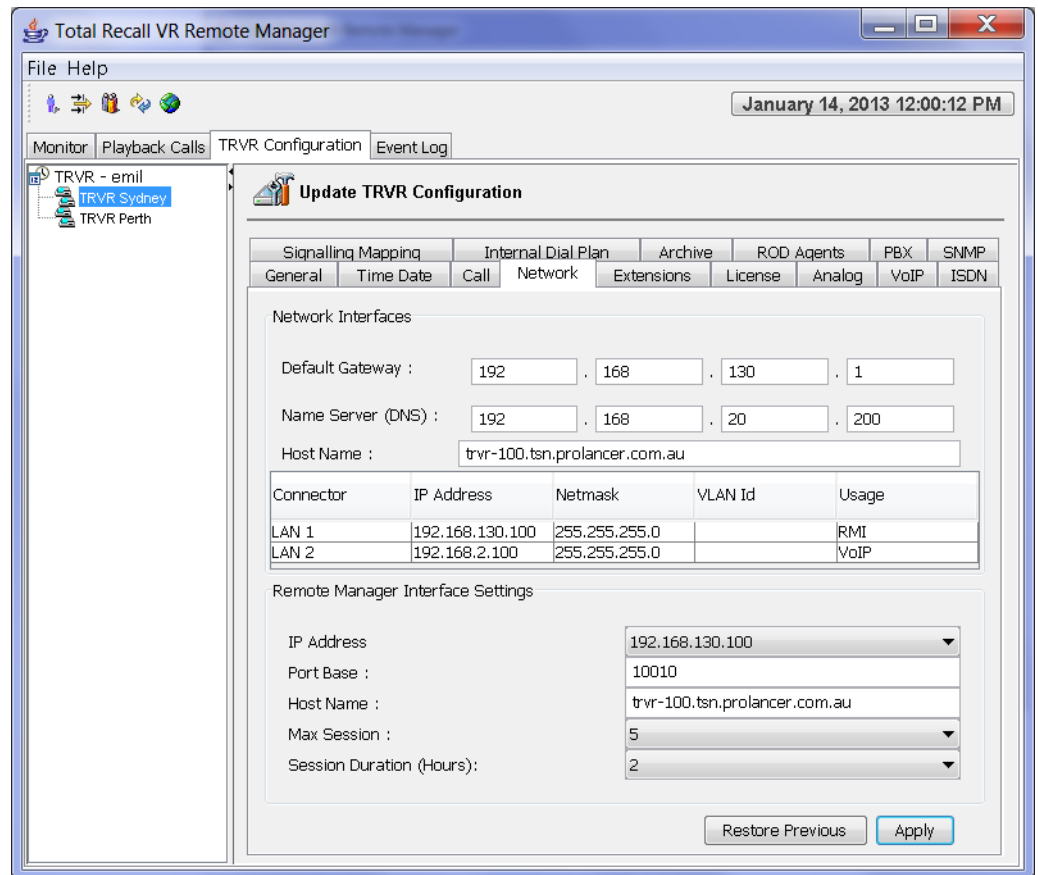
1. Select a Total Recall VR:



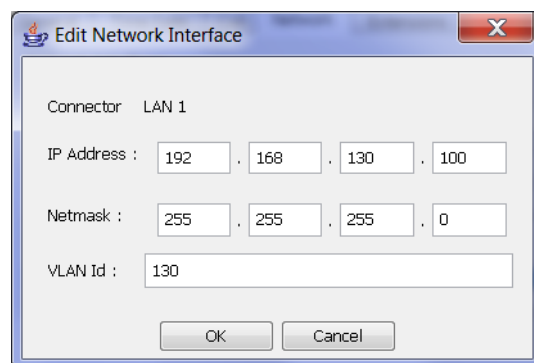
Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Network tab:





3. This tab shows a table which lists both the LAN 1 and LAN 2 interface. Select the row that contains the details of the interface that you wish to change.
4. Double-click on the row to display the Network Interface dialog:



5. Modify the interface configuration as desired.
6. Select **OK**. Remote Manager does not actually update the configuration of the Total Recall VR at this stage. It only remembers the new parameters.
7. Select **Apply** to update the configuration of the Total Recall VR.
8. Alternatively, select **Restore Previous** to discard all changes.

If you change the IP address of the network interface that the system uses for its Remote Manager Interface, then your instance of Remote Manager will automatically connect to the new IP address.



However, you must manually update connections on all other instances of Remote Manager on your network as well as connections for other Remote Manager users of your instance of Remote Manager.

The Network Settings dialog makes provisions to configure other network parameters such as the default gateway, a name server (DNS) and hostname.

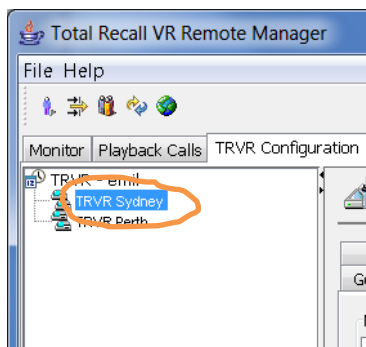
The following table shows the default configuration.



Parameter	Default Value
Default Gateway	Not set
Name Server (DNS)	Not set
Hostname	Not set

To set a default gateway, DNS and hostname:

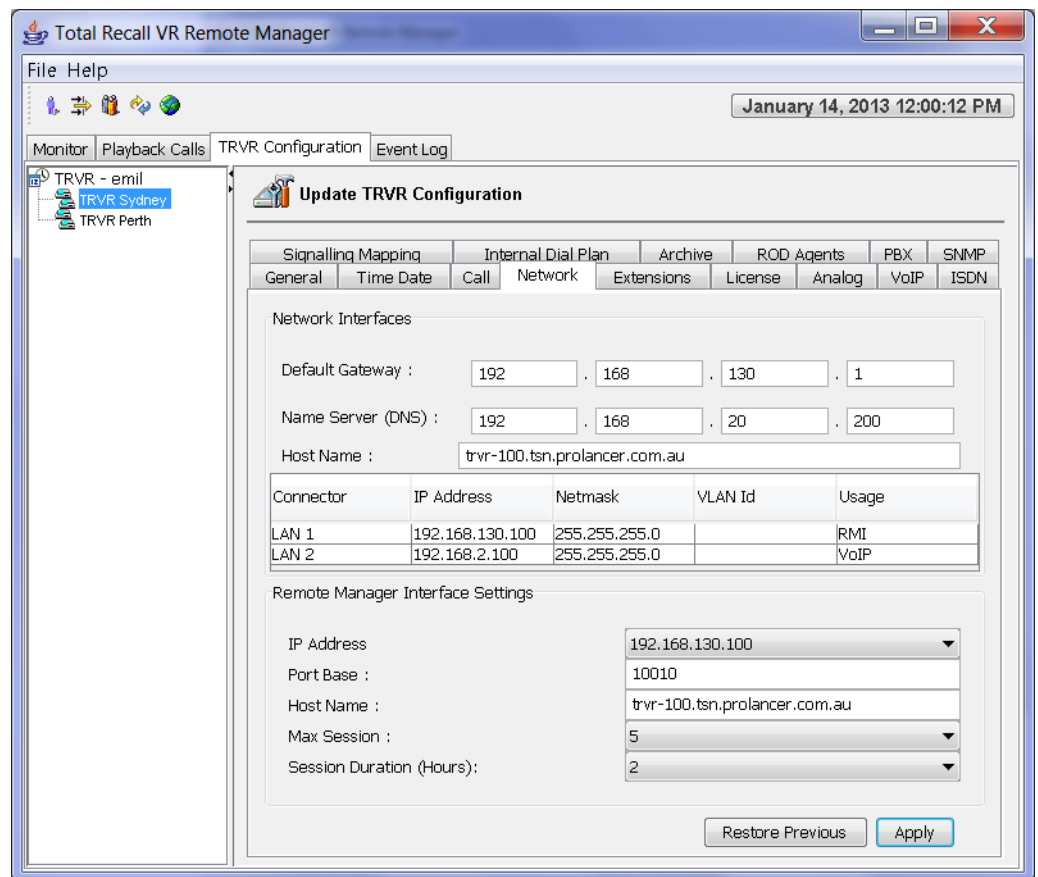
### *Set the Default Gateway, DNS and Hostname*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Network tab:



3. Set **Default Gateway**, **Name Server (DNS)** and **Host Name** as desired.



If you set or change the hostname, then you must re-start the Total Recall VR for the changes to take effect.

4. Select **Apply** to update the configuration of the Total Recall VR.
5. Alternatively, select **Restore Previous** to discard all changes.

The change is default gateway and DNS configuration is immediate. The system will apply the new configuration to the networking layer immediately. However, hostname changes require system re-start to take effect.

### 11.2.2. System Time & Date

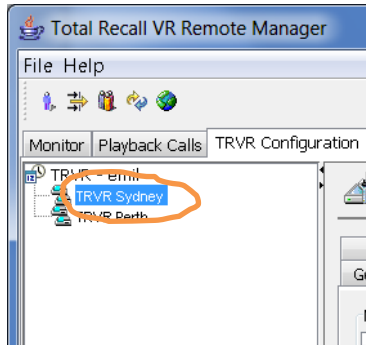
Total Recall VR has an internal clock which it uses to time stamp recordings.



The internal clock uses UTC time. This cannot be changed. As a result, all time stamps are in UTC time.

However, configuration tells Total Recall VR which time zone to use when displaying the system time and recording time stamps. By default Total Recall VR uses the Australian Eastern Standard time zone (Sydney, Australia).

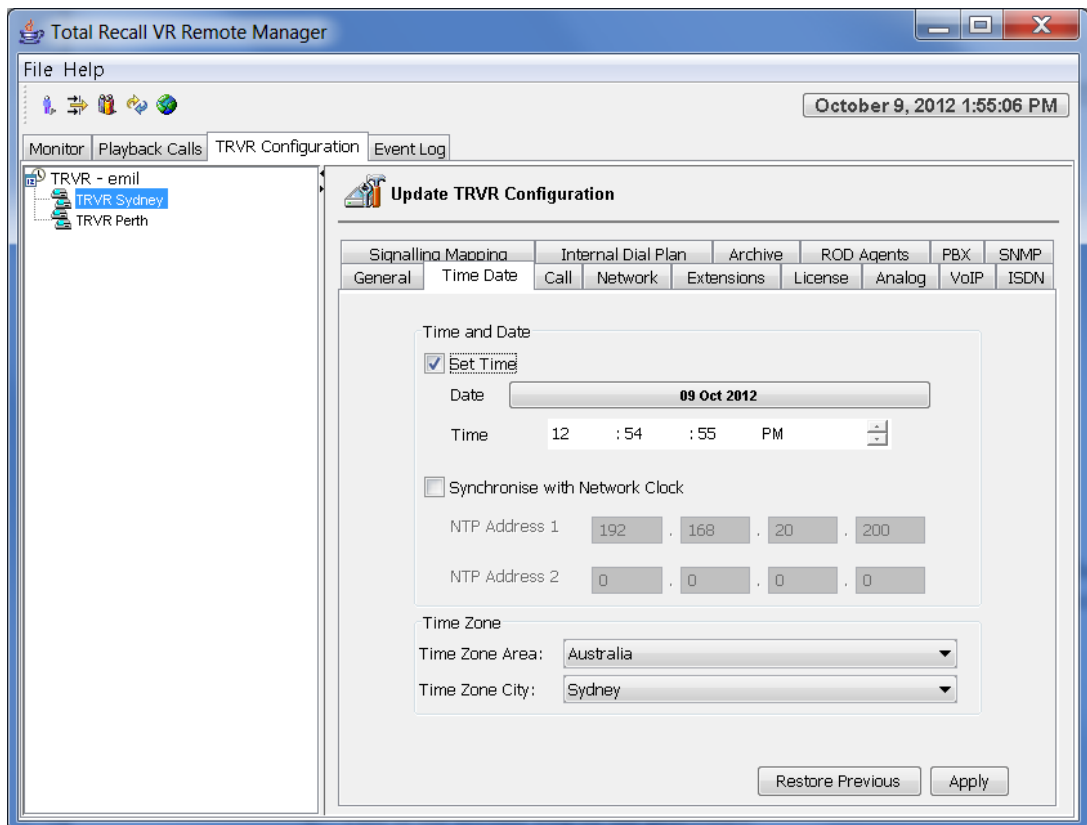
## Change the System Date and Time

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Time Date tab:



3. Set *Date*, *Time*, *Time Zone Area* and *Time Zone City* as desired.
4. Select **Apply** to set the system date and time to the new values.

The change is immediate. The system will change its date and time immediately.



You can change the time zone only if there are no recordings on the system. It is important to set the time zone before you start recording.

As an alternative, Total Recall VR can connect and continually synchronise its internal clock to a single, or a pair of, NTP clock sources.

To connect and continually synchronise the system clock to an NTP source:

1. Make sure that Total Recall VR has a working network connection. See section 11.2.1 Network Configuration for details on how to configure the network interfaces.



2. Make sure that Total Recall VR can access the NTP server(s) over the network. This may require configuration of the network infrastructure such as routers and firewalls.

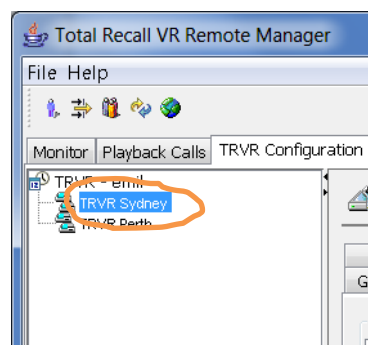
3. Avoid synchronising with ntp.org servers. Their IP addresses change constantly. As a result, Total Recall VR may not be able to connect to an NTP server reliably.



4. Make sure the NTP servers provide UTC time.

When the configuration specifies two NTP servers, Total Recall VR will synchronise its time with the 1<sup>st</sup> server. At times when the 1<sup>st</sup> server is not available, Total Recall VR will switch to the 2<sup>nd</sup> server. Then, Total Recall VR will switch to the 1<sup>st</sup> server as soon as the 1<sup>st</sup> server becomes available.

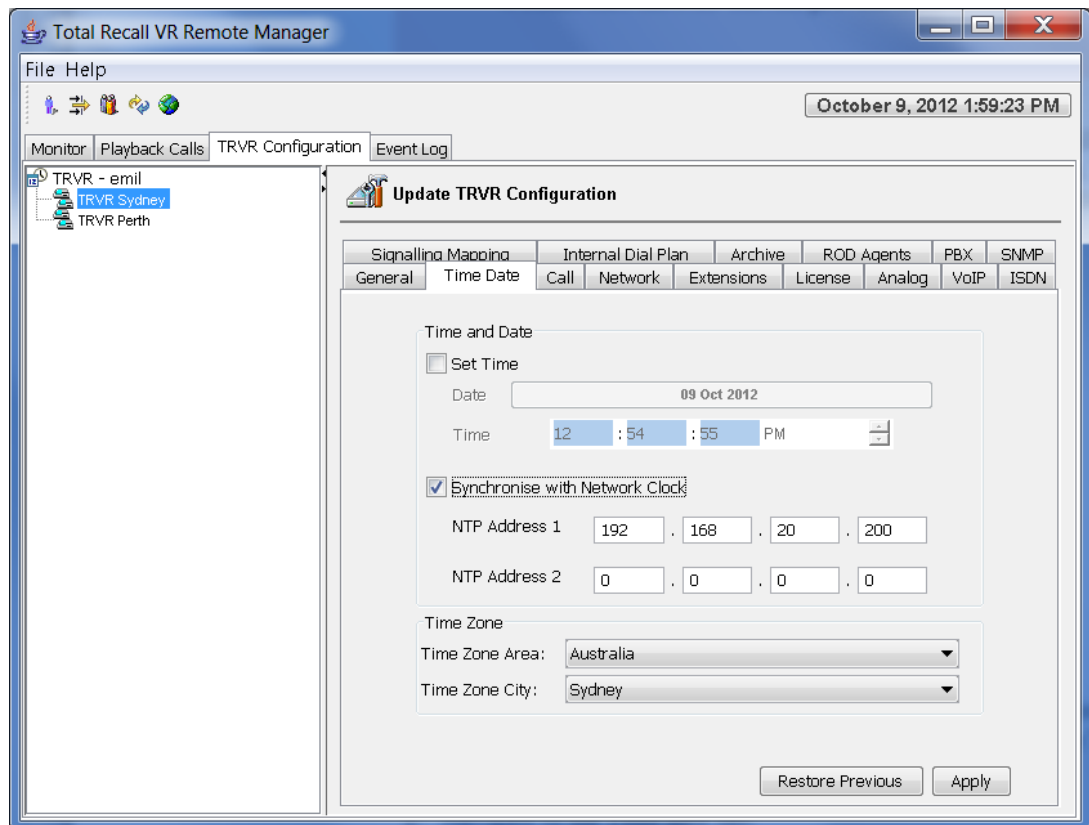
### *Synchronise with NTP Source*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Time Date tab:



3. Tick *Synchronise with Network Clock*.
4. Set *NTP Address 1* to the IP address of the primary NTP server.
5. Optionally, set *NTP Address 2* to the IP address of a secondary NTP server.



DO NOT use the same IP address for both NTP servers. If you only have one NTP server, set *NTP Address 1* only and leave *NTP Address 2* to 0.0.0.0.

6. Set *Time Zone Area* and *Time Zone City* as desired.
7. Select **Apply** to start the NTP client which will connect to the 1<sup>st</sup> NTP server for the first time.

If you get an error, then there is a networking problem between the Total Recall VR and the 1<sup>st</sup> NTP server. You must correct the problem before attempting the configuration again.

The change is immediate. The system will synchronise its date and time to that of the 1<sup>st</sup> NTP server immediately. This may result in a substantial one-off time shift. Then, the system will continue to synchronise its time with the NTP servers on regular basis

which may result in minute time shifts that do not affect the operation of Total Recall VR.

### 11.2.3. License Keys

Total Recall VR uses license keys to control access to certain features of the system. The following keys exist:

1. Channel Key. It controls the number of VoIP and ISDN recording channels. Analogue channels do not require a license key because they use a physical hardware which must be installed in the system in order to activate analogue recording channels.
2. Feature Key. It controls access to the following features:
  - a. Extension Policies,
  - b. Signalling Mapping,
  - c. Internal Dial Plan,
  - d. SMDR Parsing,
  - e. SNMP Alarms,
  - f. Network Archiving and
  - g. RoD Agents.

A third key, known as Hardware Key, which is unique to every Total Recall VR system, is used to generate the Channel and Feature key. As a result, the Channel and Feature key are also unique and cannot be transferred from one Total Recall VR to another.

Both the Channel and Feature key can be either perpetual or time limited. Remote Manger displays this attribute for each of the keys. Time limited keys automatically deactivate features at the expiry date. As a result, the behaviours of the system will automatically change on the expiry date; for example, VoIP calls will no longer be recorded or Network Archiving will simply stop working.

Generally, license keys are applied to systems in the factory. However, there are cases when users need to enter new license keys. For example, when changing the number of ISDN or VoIP recording channels, or when replacing any of the electronic components in the system.



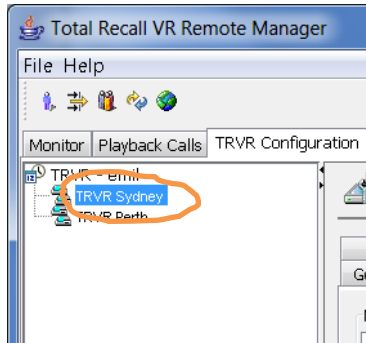
The Hardware Key is calculated by Total Recall VR from identifiers associated with various electronic components in the system. If you replace any of the following, then the system will have a new hardware key: motherboard, CPU, disk drive and mid-board.

The new Hardware Key will render the Channel and License keys invalid.

All changes to the license keys start with the Hardware Key. It is not possible to manually change the hardware key; however, it is required to generate new Channel and Feature keys.

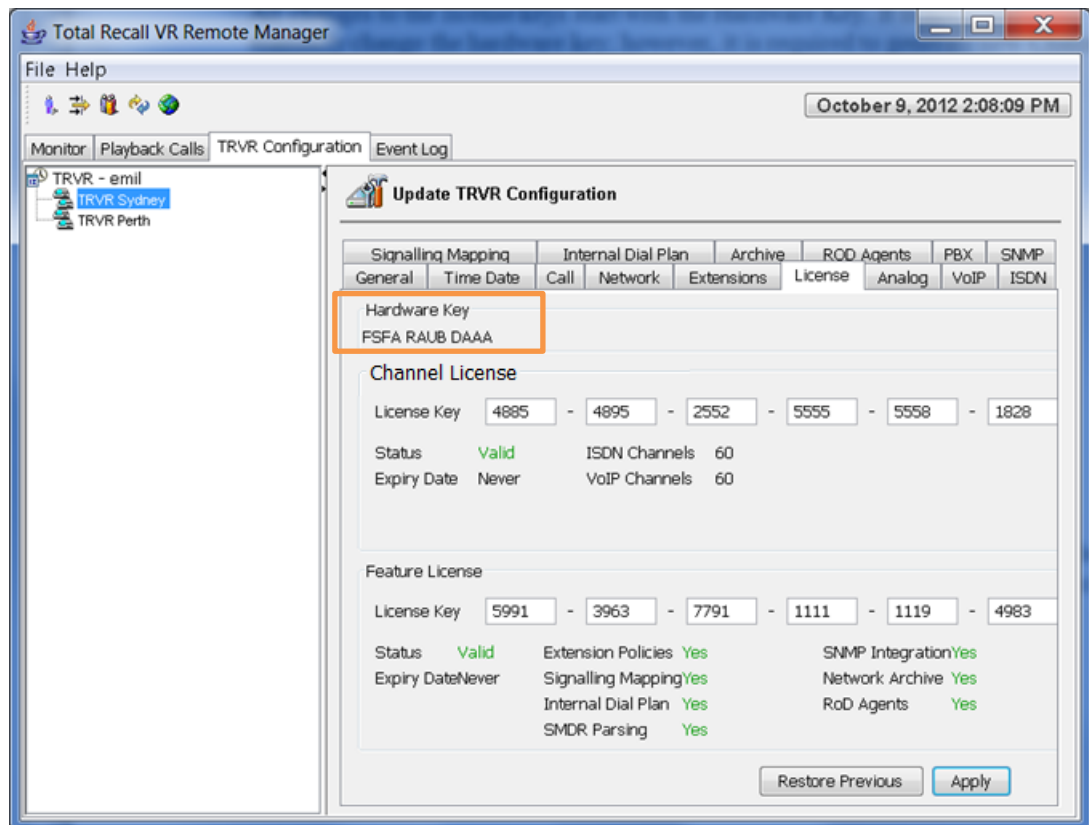
### *View the Hardware Key*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the License tab:





The License tab shows the unique Hardware Key as 3 groups of 4 characters. For example: FSFA-RAUB-DAAA on the previous screen capture.



If we ask you to tell us the Hardware Key of your system, then we expect to receive the 3 groups of 4 characters as shown on the Hardware Key dialog on your system from you.

The Channel and Feature license keys comprise of six groups of 4 digit numbers. For example: 4885-4895-2552-5555-5558-1828.

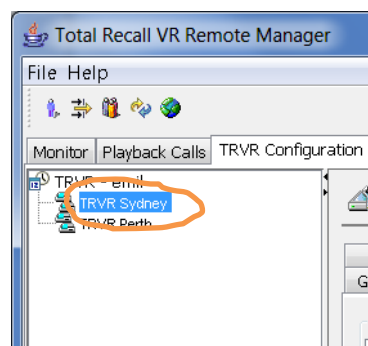




When we give you a Channel or a Feature license key, then we will give you six groups of 4 digits each for each of the keys. You must enter each group of digits exactly as received from us by following one of the subsequent procedures.

You can modify both the Channel and Feature key at the same time, or individually from the License tab.

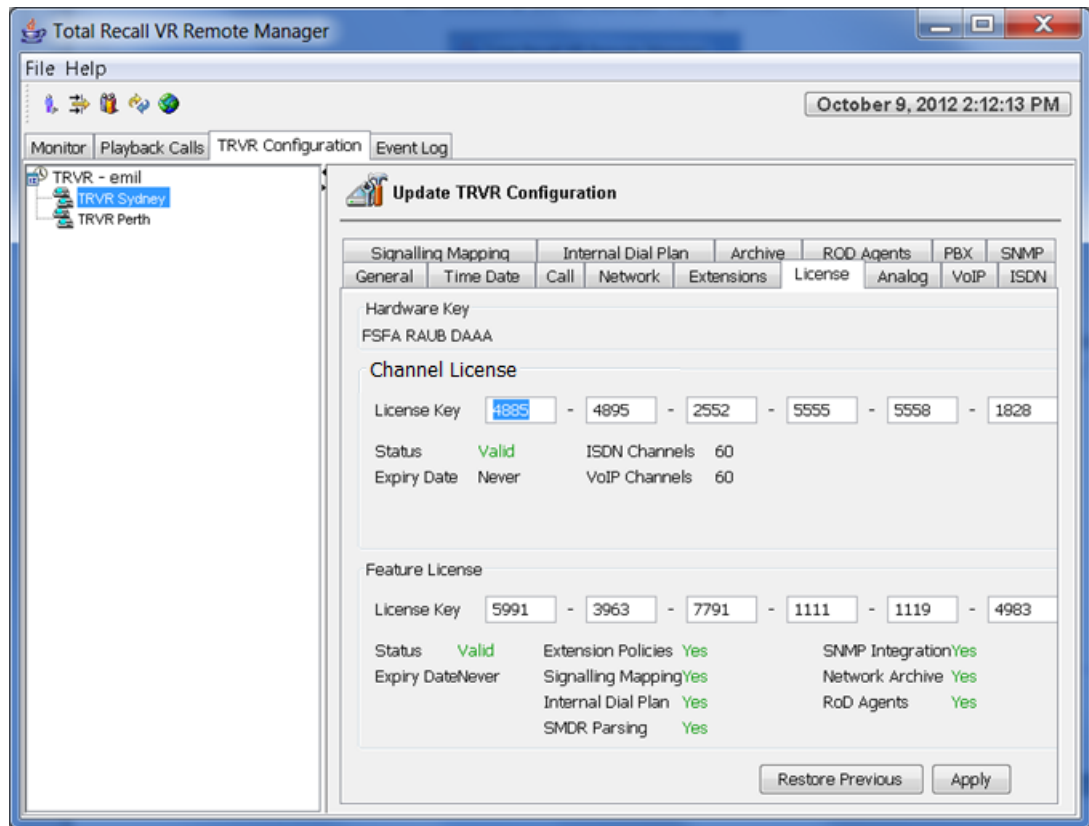
### ***Modify License Keys***

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the License tab:



3. Enter each of the 6 groups of 4 digits individually for each of the keys.
4. Select **Apply** to update the license keys of the system.

The change is immediate. The system will validate the keys and if valid it will activate/deactivate recording channels and features according to the information stored in the keys.

#### 11.2.4. Remote Manager Interface

Total Recall VR provides a Java RMI based interface (a.k.a. Remote Manager Interface) that allows client applications, such as Remote Manager, RoD Client and Supervisor Client, to manage and control it.

This interface depends on a TCP/IP network to connect clients and Total Recall VR systems. It is recommended to configure the LAN 1 interface for connection to an enterprise LAN.

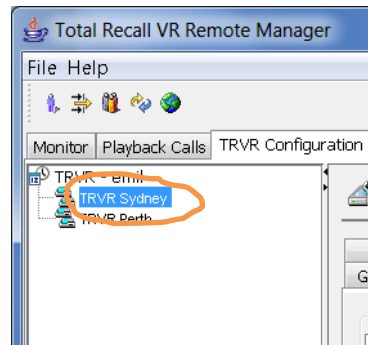




See section 11.2.1 Network Configuration for details on how to configure the network interfaces.

To configure the Remote Manager Interface to accept client connections over an enterprise LAN:

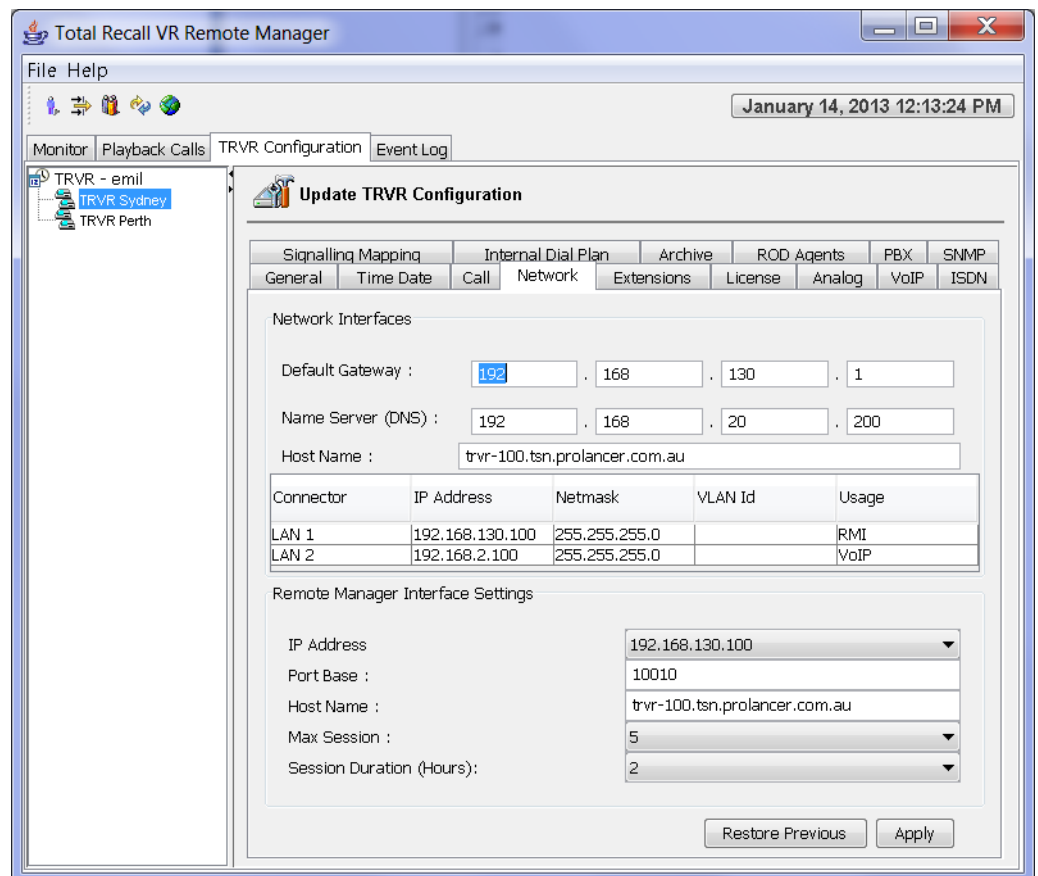
### Configure the Remote Manager Interface for LAN Access

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Network tab:



3. Select **IP Address**. Choose the IP address that is assigned to the LAN 1 or LAN 2 interface depending on which network you wish to use for client connections.
4. Enter **Port Base**. Clients need both the IP address and the base port in order to connect to the Total Recall VR.

5. Optionally, enter **Host Name**. This can be different to the hostname that is assigned to the Total Recall VR; however, it must have a DNS mapping to one of the IP addresses that are assigned to the Total Recall VR LAN interfaces.
6. Set **Max Sessions** to the maximum number (between 0 and 99) of clients that are allowed to connect at the same time.

Each client connection requires system resources. The more clients connect at the same time, the less system resources can be dedicated to recording.

7. Set **Session Duration** to the maximum duration (between 30 minutes and 2 hours and 30 minutes in 30 minute increments) of each session. Total Recall VR will automatically end active sessions after this period forcing clients to re-connect if they wish to continue to interact with it.
8. Select **Apply** to restart the interface which will start accepting connections from clients on the specified IP address and port.

The change is immediate. The system will close all active connections from clients, re-start itself and start accepting connections from clients on the specified IP address and port.

Your instance of Remote Manager will automatically re-connect to the Remote Manager Interface with the new configuration.



However, you must manually update connections on all other instances of Remote Manager on your network as well as connections for other Remote Manager users of your instance of Remote Manager.

### 11.2.5. Recorder ID

Every Total Recall VR can be assigned an ID which is a number between 1 and 999 inclusive. The default value of the ID is 1.



If you have only one Total Recall VR, then you can leave the ID set to its default value. You may skip this section.

Total Recall VR uses its ID as a watermark when creating recordings and archives of recordings.



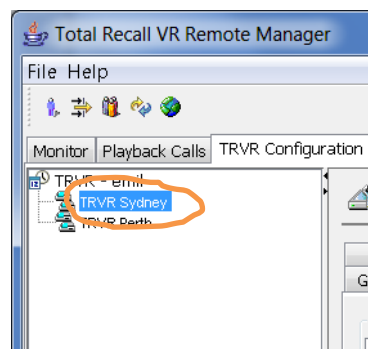
If you have multiple Total Recall VRs, then it is mandatory to assign a different ID to each.



You risk data loss and corrupt archives if you do not.

To change the ID of a Total Recall VR:

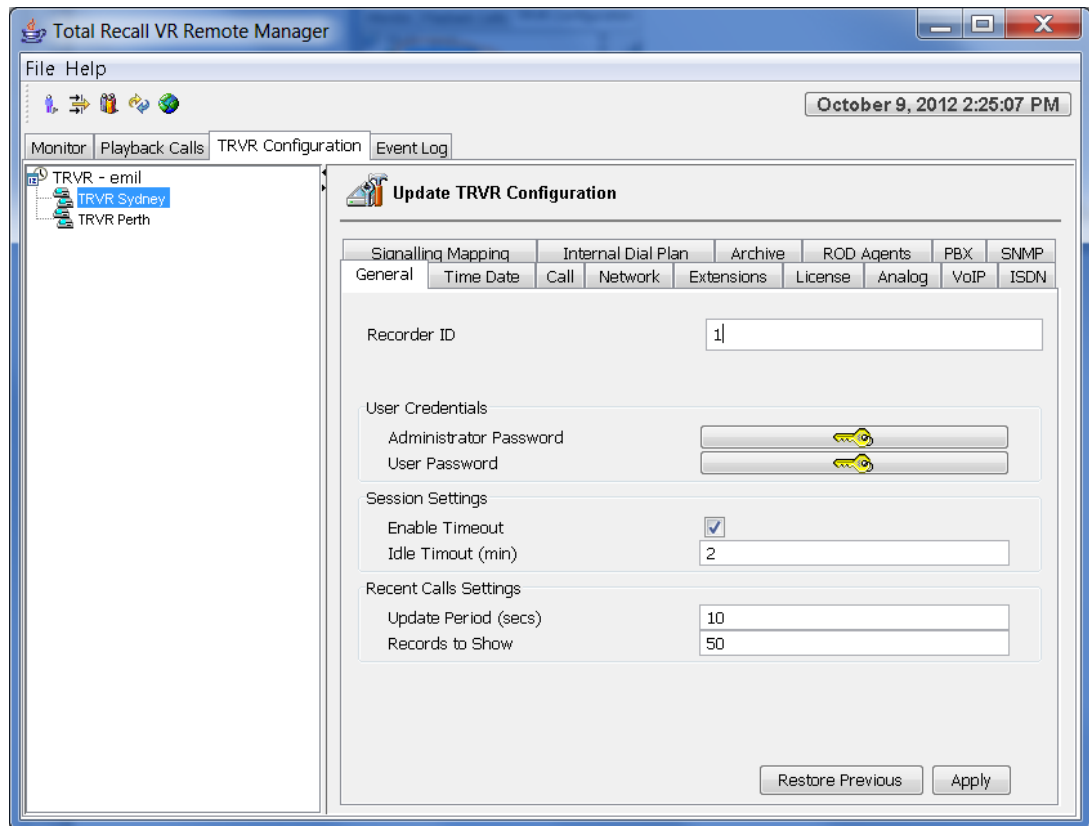
### ***Change the Recorder ID***

1. Select a Total Recall VR:



Note that you can only select a Total recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the General tab:



3. Set **Recorder ID** to a value between 1 and 999 (inclusive).
4. Select **Apply**.

The action may take considerable time to complete if there are recordings on the recorder. Allow 1 minute of processing time for every 1000 recordings on the recorder.



Total Recall VR will not be recording while it is processing the request to change the recorder ID.

### 11.3. Recording

The audio recorder has comprehensive configuration options. The embedded GUI makes provision for the management of most of them including:

1. Analogue Settings: analogue recording channel configuration.
2. ISDN Settings: ISDN recording channel configuration.
3. VoIP Settings: VoIP recording channel configuration.
4. Call Settings: general recorder configuration.

5. Extension Settings: global recording policy and extensions recording policies (basic configuration only, some limitations apply)

However, management of some configuration is only possible with Remote Manager. This includes:

1. Extension Settings: extension recording policies (advanced configuration).
2. Signalling Mapping: signalling mapping rules.
3. Internal Dial Plan: internal dial plan rules.
4. PBX Integration: SMDR processing configuration.

Total Recall VR uses the Signalling Mapping and Internal Dial Plan configuration to classify numbers, which it detects in signalling messages when recording telephone calls, as Total Recall VR Extensions (see section 2.4.1 Extensions).

### 11.3.1. Analogue Settings

Total Recall VR may be equipped with analogue recording channels, which are capable of capturing audio from different analogue sources and analogue telephone lines.

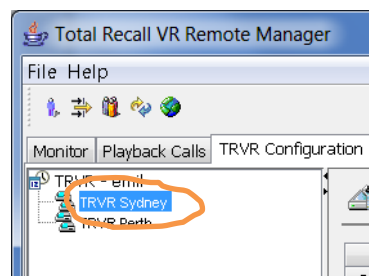
The default configuration for all analogue recording channels is:



- Recording trigger: VOX level 4, signal level -32dBm (19.5mV).
- Beep tone: disabled (off).
- DTMF tone detection: enabled (on).
- VoX timeout: 15 seconds.
- Channel extension: none.

To change the configuration of an analogue recording channel:

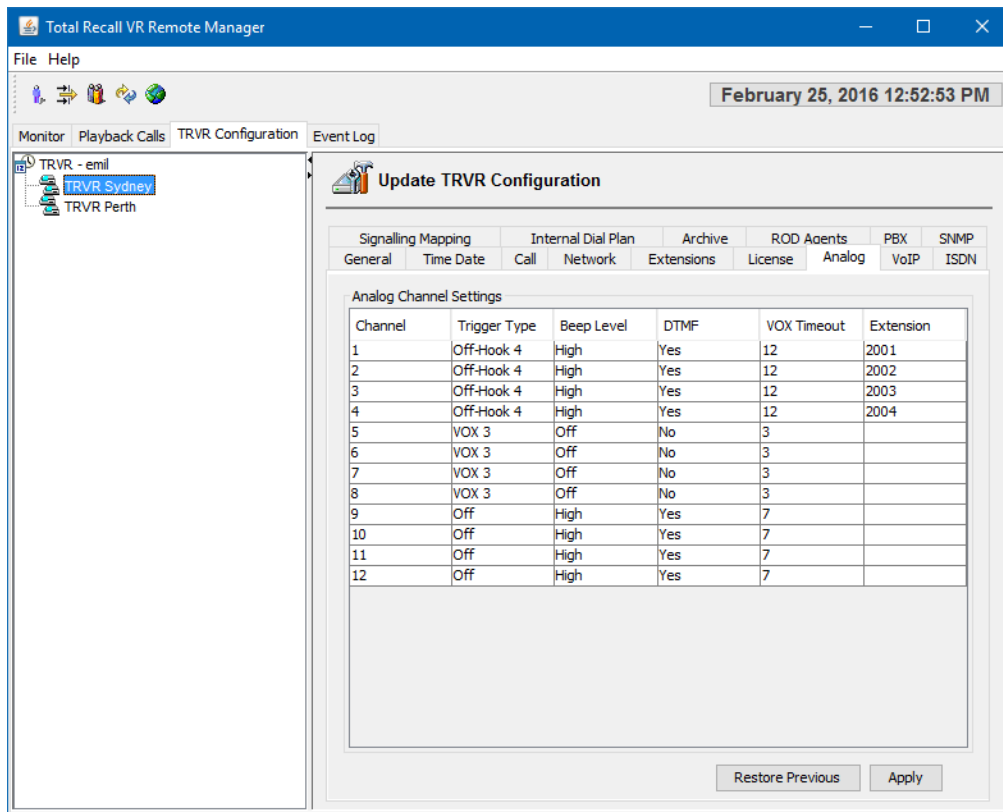
#### *Configure Analogue Recording Channels*

1. Select a Total Recall VR:

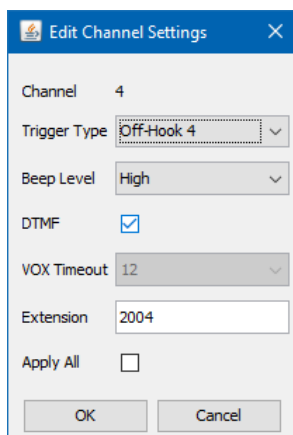


Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Analogue tab:



3. Select the row that shows data for the channel that you wish to change.
4. Double click on the row to display the Channel Settings dialog:



5. To define the type of event that triggers (start/stop) recording on the analogue recording channel, select **Trigger**.

Select an Off-Hook level if you wish to use DC voltage change as a recording trigger. When a telephone line is connected to the channel, typical on-hook voltage is above 42V and off-hook voltage is below 15V.

Recording starts when the DC voltage on the line that is connected to the recording channel becomes lower than the one set by the Off-Hook level. It stops when the DC voltage on the line becomes higher than the set Off-Hook level.



Trigger	DC Voltage
Off-Hook 1	5V
Off-Hook 2	10V
Off-Hook 3	16.5V
Off-Hook 4	20V
Off-Hook 5	25V
Off-Hook 6	30V

Select a VOX level if you wish to use signal level as a recording trigger. Recording starts when the level of the signal on the line that is connected to the recording channel is above the level set by the VOX level. It stops when the signal level is below the VOX level, but after a user configurable grace period: see **VOX Timeout** below.

Trigger	Signal Level
VOX 1	-20dBm (77.5mV)
VOX 2	-24dBm (48.9mV)
VOX 3	-28dBm (30.8mV)
VOX 4	-32dBm (19.5mV)
VOX 5	-36dBm (12.3mV)
VOX 6	-40dBm (7.75mV)

Select Manual if you wish to allow third party applications to control recording over the Total Recall VR Remote Manager Interface on the channel.

Finally, if you do not connect a signal or telephone line to the recording channel, then select Off.

- To enable the generation of recording beep (pip tone) select Low (quiet, -30dBm), Medium (-24dBm) or High (loud, -18dBm) as value for **Beep**, otherwise leave it to its default value Off.

If enabled, Total Recall VR will generate a short beep tone every 15 seconds on the line. The tone will be heard by all parties that are connected by the line.

- Optionally, un-tick **Detect DTMF** to disable DTMF tone detection on the channel.

Total Recall VR detects DTMF tones by default on all recording channels, including the analogue recording channels. However, you may use analogue

channels to record analogue signals from sources other than analogue telephone lines. Such sources may not carry DTMF tones, but may contain frequencies that resemble DTMF tones which Total Recall VR will (incorrectly) interpret as DTMF tones.

8. If **Trigger Type** is set to a VoX level, then enter **VoX Timeout**.

This parameter defines the period of ‘quiet time’ (absence of signal at level above the level set for the analogue channel) during recording which must pass before Total Recall VR stops recording on the channel.

9. Optionally, enter **Extension**.

The value can be just digits, for example: 2001, or any free text value, for example: Tanya’s Phone.

Total Recall VR uses this value as a “suggested” Total Recall VR Extension identifier for source of recordings that are captured on the channel. Any number information in the call signalling will override this value when recording calls on analogue telephone lines.

10. Optionally, tick **Apply All** to record the same settings for all analogue recording channels.
11. Select **OK**. Remote Manager does not actually update the configuration of the Total Recall VR at this stage. It only remembers the new parameters.
12. Repeat steps 2 to 8 for other recording channels.
13. Select **Apply** to update the configuration of the Total Recall VR.
14. Alternatively, select **Restore Previous** to discard all changes.



If you change the configuration while recording, then all active recordings on all analogue channels will terminate when you select **Apply** in step 12.

New recordings will start based on the new configuration for the analogue channels.

### 11.3.2. ISDN Settings

Total Recall VR may be equipped with ISDN recording channels, which are capable of capturing signalling and audio on ISDN PRI links.



Use a Channel (license) Key to activate ISDN recording channels, see section 11.2.3 License Keys.

Unlike analogue channels, it is not possible to configure ISDN recording channels individually. Instead the configuration captures the configuration of the ISDN PRI links that are tapped by Total Recall VR.



ISDN recording channels DO NOT map to B channels on ISDN PRI links. They are allocated dynamically to calls on all ISDN PRI links on first-come, first-served basis.

Total Recall VR can tap both E1 and T1 links. The default configuration for each type of link is:

	<b>E1 Link</b>	<b>T1 Link</b>
Line Frame	CRC4	ESF
Line Code	HDB3	B8ZS
Protocol	EuroISDN E1	National ISDN 2
D Channel	16	24
B Channels	30	23
Dial Plan	National	National
Local Dial Plan	National	National
Country Code	Australia	USA

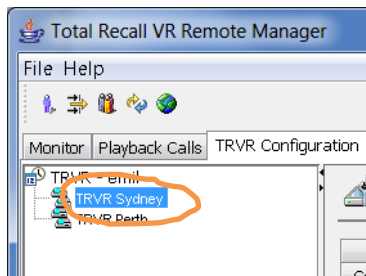


The configuration for each ISDN link should reflect the configuration for that link on the PBX.

To change the configuration of the ISDN links and recording channels:

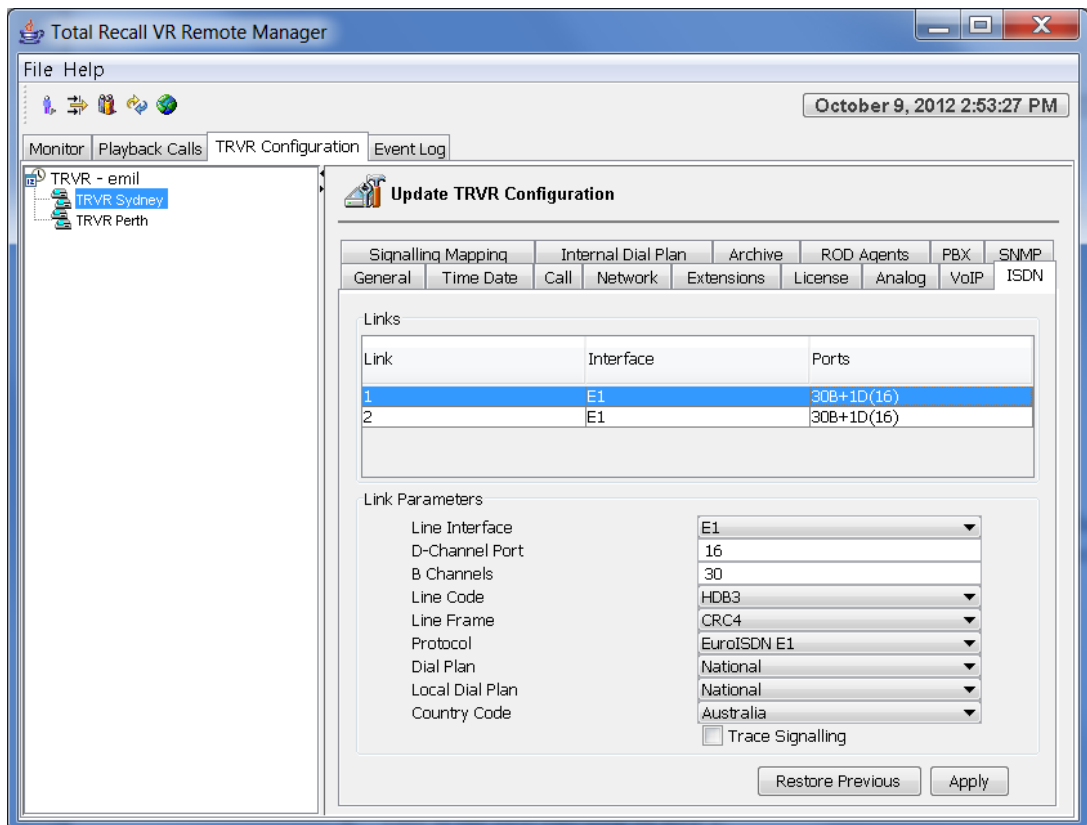
### *Configure ISDN Links*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the ISDN tab:



3. Select the link that you wish to configure.
4. Select values for various parameters so that they match the configuration for the ISDN link on the PBX.
5. Optionally, tick **Signalling Tracing**.

If you enable signalling tracing, then Total Recall VR will write all ISDN signalling messages that it detects on the link in the log. You can examine the logs and view the content of the messages with on the Event Log tab.

This feature is only intended for troubleshooting. DO NOT leave it on during normal operation. It will severely reduce the recording capacity of the system.

6. Repeat steps 2 to 3 for other links.

7. Select **Apply** to update the configuration of the Total Recall VR.
8. Alternatively, select **Restore Previous** to discard all changes.



If you change the configuration while recording, then all active recordings on all ISDN recording channels will terminate when you select **OK** on the ISDN Provider Settings dialog.

New recordings will start based on the new configuration for the ISDN links and channels.

### 11.3.3. VoIP Settings

Total Recall VR may be equipped with VoIP recording channels, which can operate in passive and active mode.

In passive mode VoIP recording channels are capable of detecting and capturing SIP, H.323 and RTP packets on IP networks via a SPAN port on an Ethernet switch or an alternative Ethernet link tapping device.

In active mode VoIP recording channels are capable of processing SIP sessions (calls) as well as receiving raw RTP streams directly on one or both of the system LAN interfaces.



Use a Channel (license) Key to activate VoIP recording channels, see section 11.2.3 License Keys.

Unlike analogue channels, it is not possible to configure VoIP recording channels individually. Instead the configuration captures the configuration of VoIP packet collector which is an integral part of every Total Recall VR.



VoIP recording channels are virtual (ephemeral) channels. They are allocated dynamically to SIP sessions and/or H.323 calls on first-come, first-served basis.

### 11.3.3.1. Packet Collector Settings

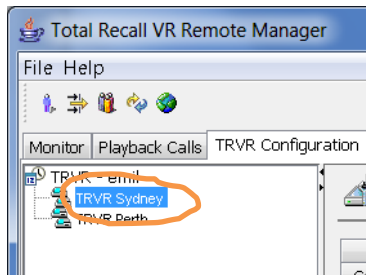
The VoIP packet collector is a passive packet detection and collection engine that by default attaches to the LAN 2 interface. As a result it detects and collects all SIP, H.323 and RTP packets that appear on the LAN 2 interface.



Each Total Recall VR has one internal VoIP packet collector that can collect SIP, H.323 and RTP packets on one LAN interface that is specified in its configuration.

To change the configuration of the VoIP packet collector:

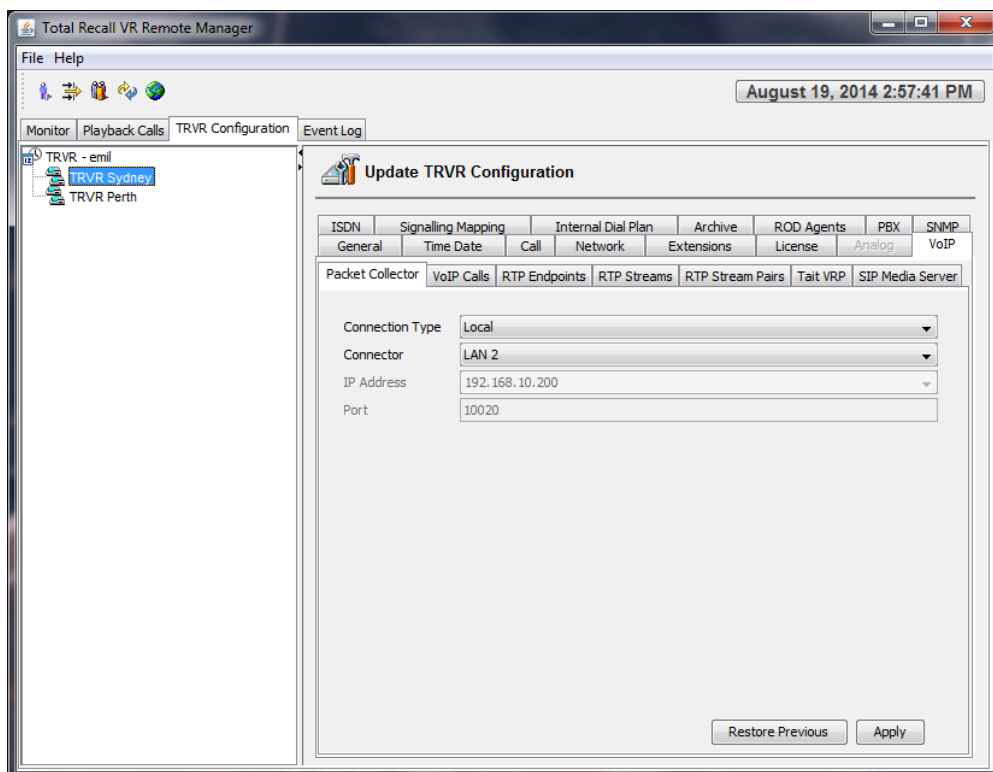
#### Configure the Local VoIP Packet Collector

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the VoIP tab and then navigate to the Packet Collector tab:



3. Select **Connector Type**. Choose:

- None: if you wish to disable the VoIP packet collector.
  - Local: if you wish to enable and use the local VoIP packet collector.
4. Select **Connector**. This is the LAN connector which will be used for VoIP call recording.

We recommend you use LAN 2 for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN.

5. Select **Apply** to update the configuration of the Total Recall VR.
6. Alternatively, select **Restore Previous** to discard all changes.



If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK** on the Packet Collector Settings dialog.

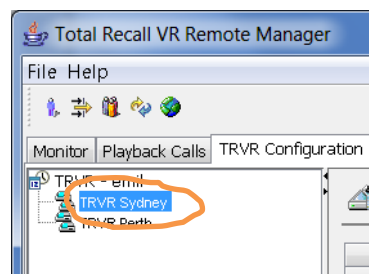
New recordings will start based on the new configuration for the VoIP packet collector and channels.



If you are using a Total Recall VR Traffic Collector, then you must configure Total Recall VR to accept VoIP packets from the Traffic Collector instead of using the internal VoIP packet collector.

Traffic Collectors can send packets that they collect from networks using the TCP of UDP protocol. TCP is the recommended protocol as it guarantees the delivery of packets.

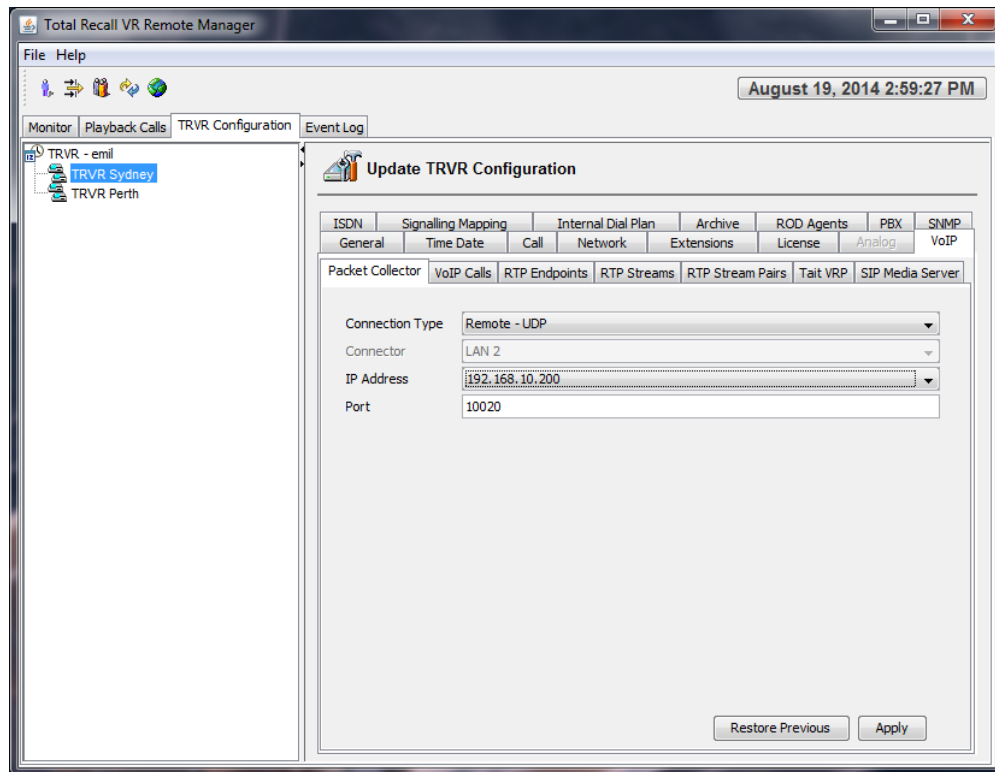
### ***Configure a Remote VoIP Packet Collector***

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the VoIP tab and then navigate to the Packet Collector tab:



3. Select **Connector Type**. Choose:

- None: if you wish to disable the packet collector.
- Remote – TCP: (recommended) to use the TCP protocol for packet delivery.
- Remote – UDP: to use the UDP protocol for packet delivery.

4. Select **IP Address**.

This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

We recommend you use the IP address assigned to the LAN 2 interface on for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN.

5. Enter **Port**.

This is the TCP or UDP port that Total Recall VR will use to accept connections from Traffic Collectors.

6. Select **Apply** to update the configuration of the Total Recall VR.

7. Alternatively, select **Restore Previous** to discard all changes.



If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you



select **OK** on the Packet Collector Settings dialog.

New recordings will start based on the new configuration for the VoIP packet collector and channels.

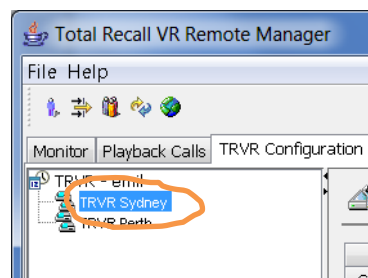
### 11.3.3.2. VoIP Call Settings

By default, the VoIP packet collector detects SIP sessions on the network that is connected to the LAN 2 interface. It ignores all H.323 calls.

To change the configuration for VoIP call recording:

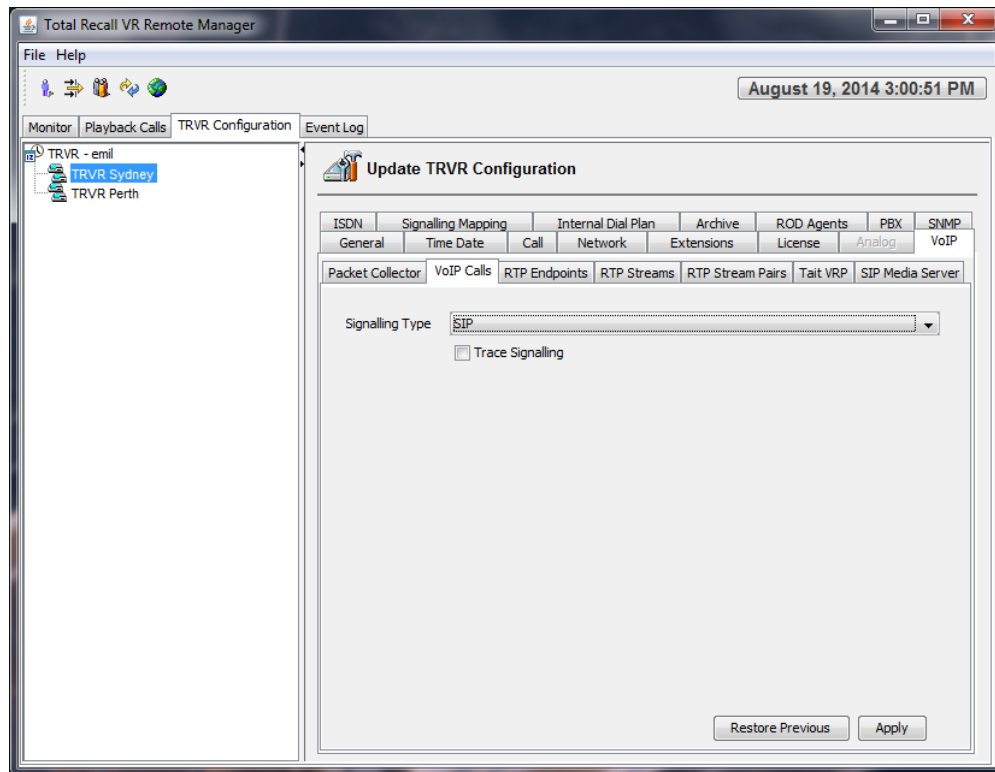
#### *Configure VoIP Call Recording*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the VoIP tab and then navigate to the VoIP Calls tab:



3. Select **Signalling Type**. Choose:

- Unsupported: if you wish to disable VoIP call recording.
- SIP: if your network is using SIP signalling
- H.323: if your network is using H.323 signalling

4. Optionally, tick **Signalling Tracing**.

If you enable signalling tracing, then Total Recall VR will write all SIP and H.323 signalling messages that it receives in its logs. You can examine the logs and view the content of the messages on the Event Log tab.

This feature is only intended for troubleshooting. **DO NOT** leave it on during normal operation. It will severely reduce the recording capacity of the system.

5. Select **Apply** to update the configuration of the Total Recall VR.

6. Alternatively, select **Restore Previous** to discard all changes.



If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK** on the VoIP Call Settings dialog.

New recordings will start based on the new configuration.

### 11.3.3.3. RTP Endpoint Settings

Total Recall VR can record RTP streams that are sent between RoIP and AoIP equipment in passive mode – similar to recording VoIP calls.

By default, Total Recall VR does not record any RTP streams unless they are part of a SIP session. To record RTP streams that are sent between RoIP devices you must add RTP Endpoints to the configuration.



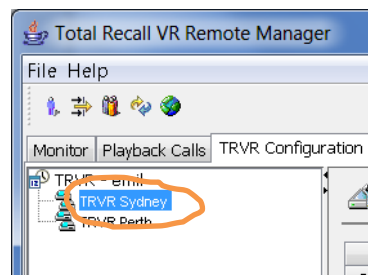
Total Recall VR will collect RTP packets in passive mode if you add RTP Endpoints to the configuration.

If you wish to record RTP streams in active mode using UDP port services, then add RTP Streams and/or RTP Stream Pairs to the configuration.

To add an RTP Endpoint to the configuration:

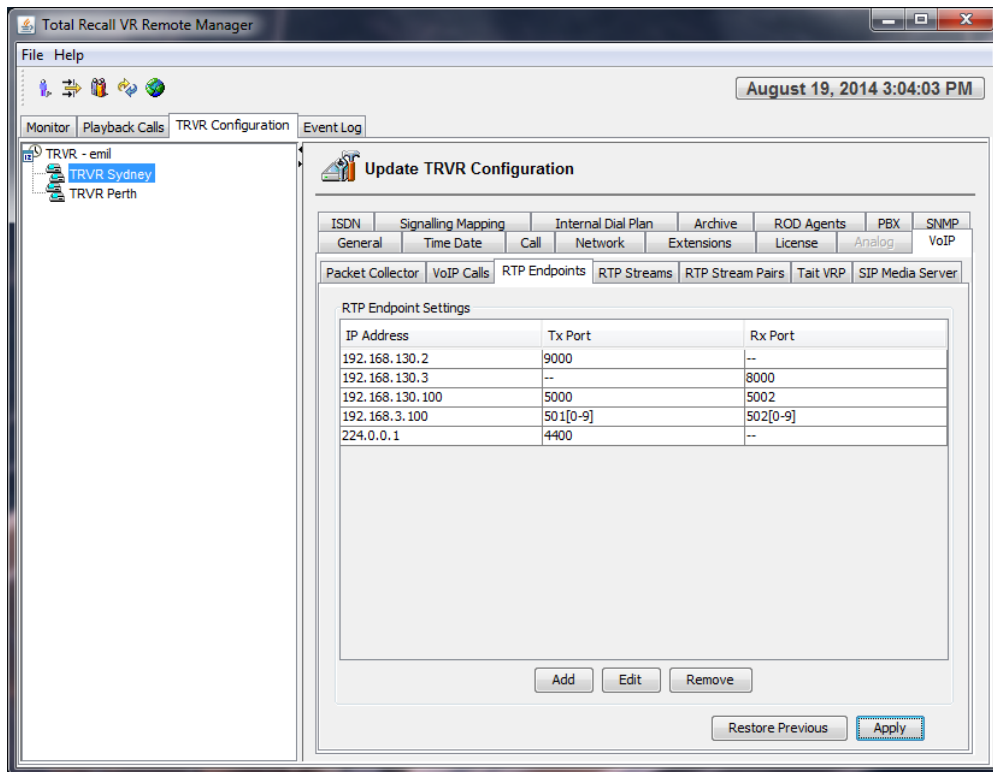
#### *Add RTP Endpoint(s)*

1. Select a Total Recall VR:

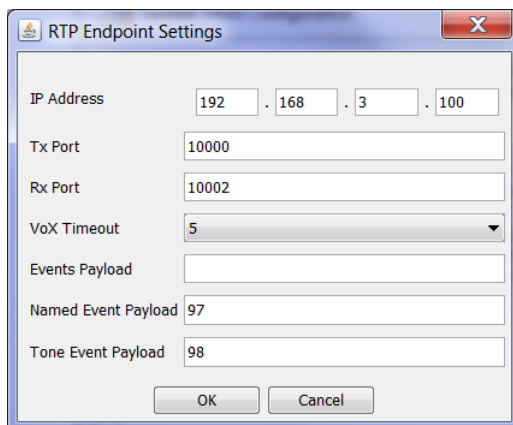


Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the VoIP tab and then navigate to the RTP Endpoints tab:



3. Select **Add** to display the RTP Endpoint Settings dialog:



4. Enter **IP Address**.

This is the IP address of the RoIP device where RTP stream originate and/or terminate.

5. Optionally, if you wish to record the RTP streams that originate from this RoIP device, enter **Tx Port**.

Note: you must enter **Tx Port** or **Rx Port**, or both. If you enter only **Tx Port**, then Total Recall VR will record all RTP streams that are sent by the RoIP device with the specified IP address on the specified Tx port.

You can enter a regular expression which matches a range of ports. For example, 700[0-9] which will instruct Total Recall VR to record all RTP streams that originate from this RoIP device on ports 7000 to 7009 inclusive.

6. Optionally, if you wish to record the RTP streams that terminate at this RoIP device, enter ***Rx Port***.

Note: you must enter ***Tx Port*** or ***Rx Port***, or both. If you enter only ***Rx Port***, then Total Recall VR will record all RTP streams that are received by the RoIP device with the specified IP address on the specified Rx port.

If you wish to record multicast RTP streams, then enter ***Rx Port*** and leave ***Tx Port*** blank. For example, to record a multicast stream sent to IP address 224.0.0.1 and port 4400, enter 224.0.0.1 for ***IP Address*** and 4400 for ***Rx Port***.

You can enter a regular expression which matches a range of ports. For example, 700[0-9] which will instruct Total Recall VR to record all RTP streams that terminate at this RoIP device on ports 7000 to 7009 inclusive.

7. Select ***VOX Timeout***.

This parameter defines the period of ‘quiet time’ (absence of RTP packets) during recording which must pass before Total Recall VR stops recording the RTP stream.

8. Optionally, enter ***Events Payload*** if you wish to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages. Otherwise leave this field blank.

The value of ***Events Payload*** should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages.

Note: In most cases ***Events Payload*** will be blank as RFC 2833 messages that carry multiple named and/or tone events are rarely implemented.

9. Optionally, enter ***Named Event Payload*** if you wish to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages. Otherwise leave this field blank.

The value of ***Named Event Payload*** should match the payload ID that appears in RTP packets that carry named RFC 2833 messages.

10. Optionally, enter ***Tone Event Payload*** if you wish to collect RFC 2833 tone events that are sent in RFC 2833 messages. Otherwise leave this field blank.

The value of ***Tone Event Payload*** should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages.

11. Select **Ok** to return to the table of RTP Endpoint Settings where you must select **Apply** to apply the settings.



If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

New recordings will start based on the new configuration.

To change the configuration for an RTP Endpoint simply select the row that contains its settings and select **Edit** which will display the RTP Endpoint Settings dialog where you can change the settings.

Finally, to remove an RTP Endpoint, simply select the row that contains its settings and select **Remove**.

#### 11.3.3.4. RTP Stream Service Settings

Total Recall VR can record RTP streams that are sent by RoIP and AoIP equipment directly to Total Recall VR by exposing UDP ports on one of its LAN interfaces.

By default, Total Recall VR does not record any RTP streams that are sent directly to it. To record RTP streams that are sent directly to Total Recall VR by RoIP devices you must add RTP Streams service to the configuration.



Total Recall VR will accept RTP packets in active mode if you add RTP Stream services to the configuration.

If you wish to record RTP streams in passive mode using the VoIP packet collector, then add RTP Endpoints to the configuration.

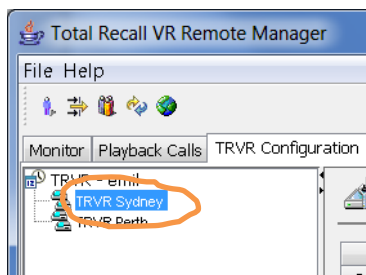




RTP Stream services accept RTP packets on a single UDP port. If the RoIP endpoint send RTP packets to two UDP ports (one for the TX and another for the Rx stream), then consider using RTP Stream Pair services instead.

To add an RTP Stream service to the configuration:

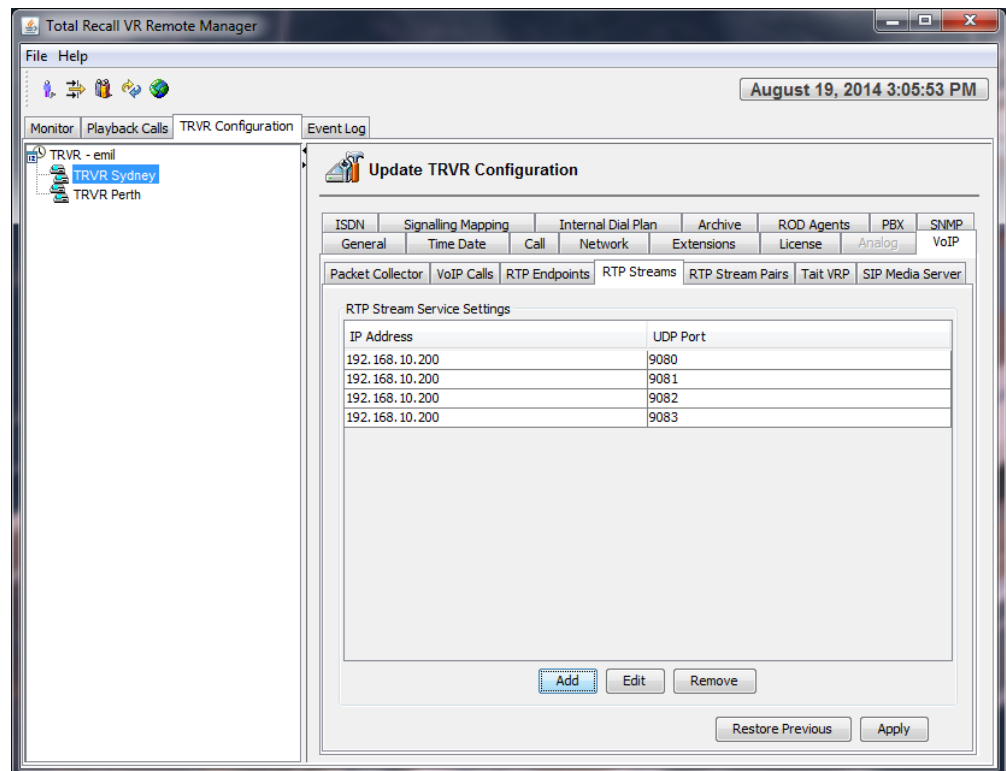
#### **Add RTP Stream Service(s)**

1. Select a Total Recall VR:

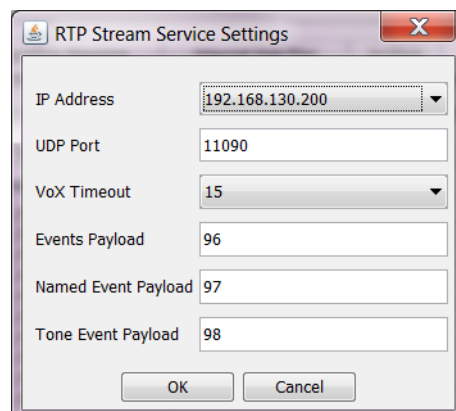


Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the VoIP tab and then navigate to the RTP Streams tab:



3. Select **Add** to display the RTP Stream Service Settings dialog:



4. Select **IP Address**.

This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

We recommend you use the IP address assigned to the LAN 2 interface for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN

5. Enter **UDP Port**.

This is the UDP port that Total Recall VR will use to receive RTP packets from RoIP devices.

6. Select **VOX Timeout**.

This parameter defines the period of ‘quiet time’ (absence of RTP packets) during recording which must pass before Total Recall VR stops recording the RTP stream.

7. Optionally, enter **Events Payload** if you wish to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages. Otherwise leave this field blank.

The value of **Events Payload** should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages.

Note: In most cases **Events Payload** will be blank as RFC 2833 messages that carry multiple named and/or tone events are rarely implemented.

8. Optionally, enter **Named Event Payload** if you wish to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages. Otherwise leave this field blank.

The value of **Named Event Payload** should match the payload ID that appears in RTP packets that carry named RFC 2833 messages.

9. Optionally, enter **Tone Event Payload** if you wish to collect RFC 2833 tone events that are sent in RFC 2833 messages. Otherwise leave this field blank.

The value of **Tone Event Payload** should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages.

10. Select **Ok** to return to the table of RTP Stream Services where you must select **Apply** to apply the settings.



If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

New recordings will start based on the new configuration.

Once you add an RTP Stream service to the configuration, Total Recall VR is ready to accept RTP packets from RoIP endpoints on the IP address and port that are specified in the configuration of the RTP Stream service.



You must configure the RoIP endpoint to send RTP packets to the RTP Stream service as well.



To change the configuration for an RTP Stream simply select the row that contains its settings and select **Edit** which will display the RTP Stream Service Settings dialog where you can change the settings.

Finally, to remove an RTP Stream, simply select the row that contains its settings and select **Remove**.

Once you update an RTP Stream service, Total Recall VR is ready to accept RTP packets from RoIP endpoints on the updated IP address and port that are specified in the configuration of the RTP Stream service.



You must change the configuration of the RoIP endpoint to send RTP packets to the RTP Stream service as well.

#### **11.3.3.5. RTP Stream Pair Service Settings**

Total Recall VR can record RTP streams that are sent by RoIP and AoIP equipment directly to Total Recall VR by exposing UDP port services.

By default, Total Recall VR does not record any RTP streams that are sent directly to it. To record RTP streams that are sent directly to Total Recall VR by RoIP devices you must add RTP Streams Pair service to the configuration.



Total Recall VR will accept RTP packets in active mode if you add RTP Stream Pair services to the configuration.

If you wish to record RTP streams in passive mode using the VoIP packet collector, then add RTP Endpoints to the configuration.

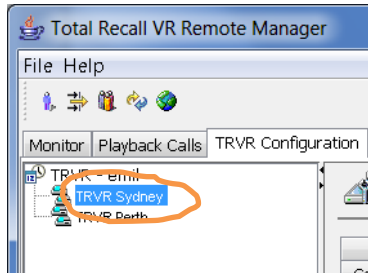




RTP Stream Pair services accept RTP packets on two UDP ports and mix the audio in the packets before passing it upstream to the recorder. If a RoIP endpoint sends RTP packets to a single UDP port, then consider using RTP Stream services instead.

To add an RTP Stream Pair service to the configuration:

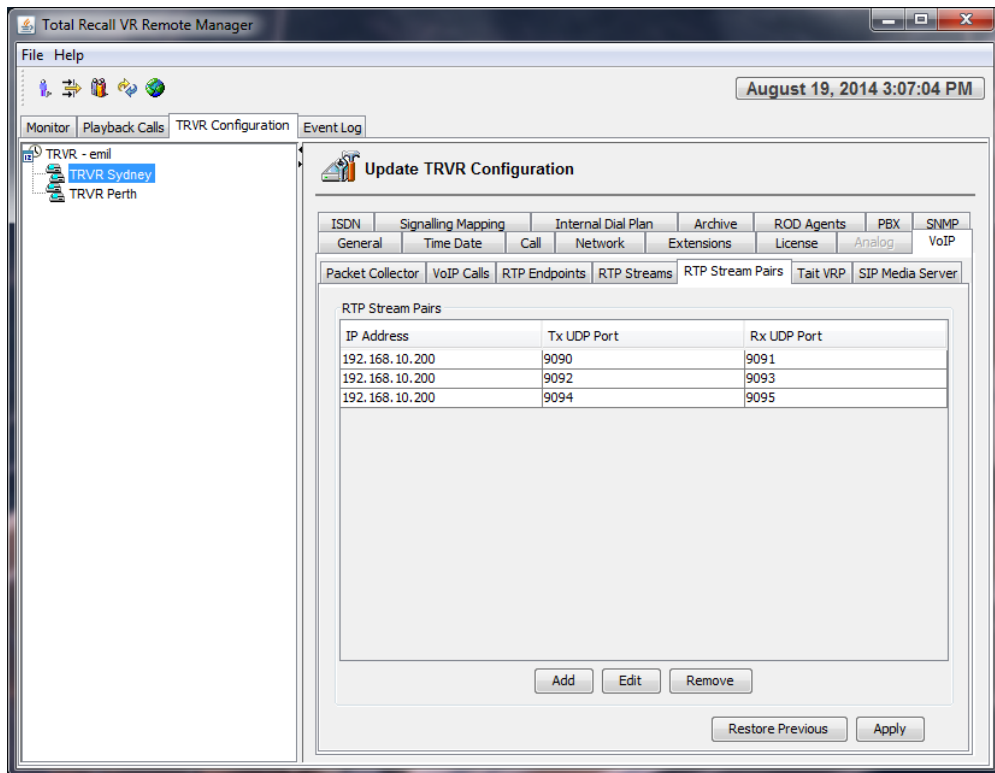
**Add RTP Stream Pair Service(s)**

1. Select a Total Recall VR:

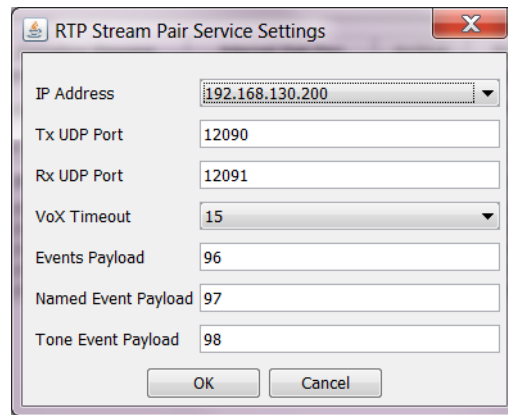


Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the VoIP tab and then navigate to the RTP Stream Pairs tab:



3. Select **Add** to display the RTP Stream Pair Service Settings dialog:



4. Select **IP Address**.

This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

We recommend you use the IP address assigned to the LAN 2 interface for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN

5. Enter **Tx UDP Port**.

This is the first UDP port in the pair of UDP ports that Total Recall VR will use to receive RTP packets from RoIP devices.

6. Enter **Rx UDP Port**.

This is the second UDP port in the pair of UDP ports that Total Recall VR will use to receive RTP packets from RoIP devices.

7. Select **VOX Timeout**.

This parameter defines the period of 'quiet time' (absence of RTP packets) during recording which must pass before Total Recall VR stops recording the RTP stream.

8. Optionally, enter **Events Payload** if you wish to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages. Otherwise leave this field blank.

The value of **Events Payload** should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages.

Note: In most cases **Events Payload** will be blank as RFC 2833 messages that carry multiple named and/or tone events are rarely implemented.

9. Optionally, enter **Named Event Payload** if you wish to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages. Otherwise leave this field blank.

The value of **Named Event Payload** should match the payload ID that appears in RTP packets that carry named RFC 2833 messages.

10. Optionally, enter **Tone Event Payload** if you wish to collect RFC 2833 tone events that are sent in RFC 2833 messages. Otherwise leave this field blank.

The value of ***Tone Event Payload*** should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages.

11. Select **Ok** to return to the table of RTP Stream Pair Services where you must select **Apply** to apply the settings.



If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

New recordings will start based on the new configuration.

Once you add an RTP Stream Pair service to the configuration, Total Recall VR is ready to accept RTP packets from RoIP endpoints on the IP address and pair of ports that are specified in the configuration of the RTP Stream Pair service.



You must configure the RoIP endpoint to send RTP packets to the RTP Stream Pair service as well.

To change the configuration for an RTP Stream Pair simply select the row that contains its settings and select **Edit** which will display the RTP Stream Pair Service Settings dialog where you can change the settings.

Finally, to remove an RTP Stream Pair, simply select the row that contains its settings and select **Remove**.

Once you update an RTP Stream Pair service, Total Recall VR is ready to accept RTP packets from RoIP endpoints on the updated IP address and ports that are specified in the configuration of the RTP Stream Pair service.



You must change the configuration of the RoIP endpoint to send RTP packets to the RTP Stream Pair service as well.

### 11.3.3.6. Tait VRP Service

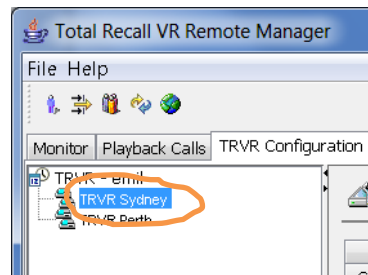
Tait VRP is a protocol used in Tait DMR and MPT networks to transport audio from calls on the networks to voice recorders. VRP is based on RTP.



Total Recall VR can record audio in Tait DMR and MPT networks by accepting VRP packets on one of its LAN interfaces and a single UDP port.

By default Total Recall VR accepts VRP packets on the IP address that is assigned to the LAN 2 interface and UDP port 9999. To change the configuration of the VRP service:

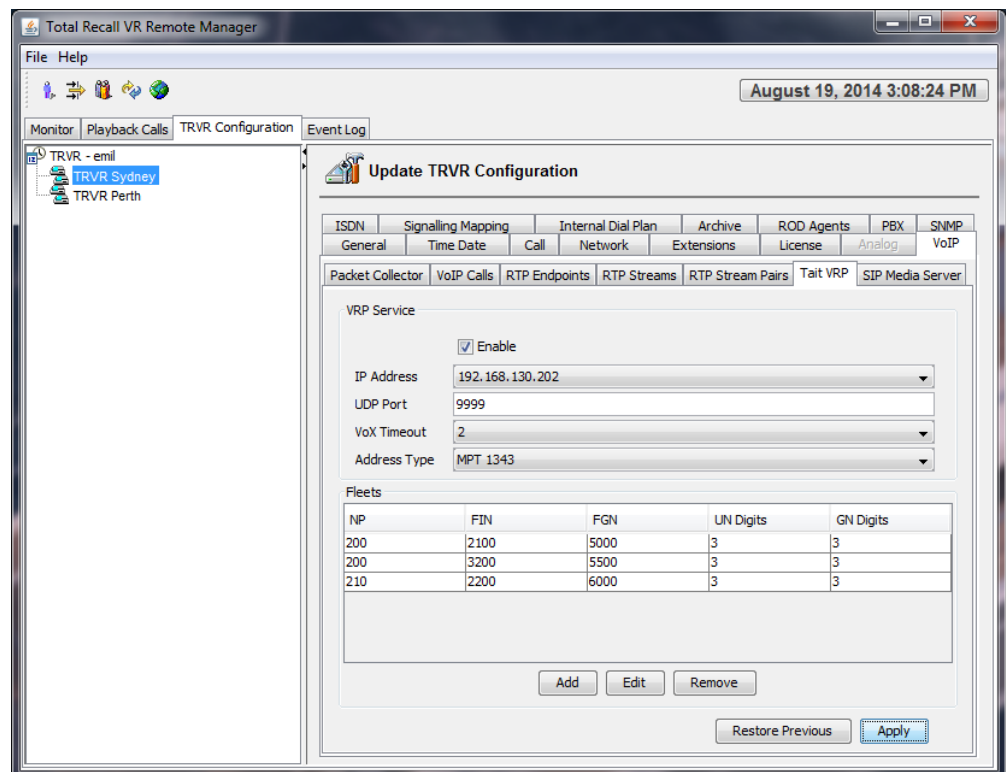
#### Configure the VRP Service

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the VoIP tab and then navigate to the Tait VRP tab:



3. Tick **Enable** to enable recording of Tait VRP calls.

4. Select ***IP Address***.

This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

We recommend you use the IP address assigned to the LAN 2 interface for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN

5. Enter ***UDP Port***.

This is the UDP port that Total Recall VR will use to receive VRP packets from other devices on the network.

6. Select ***VOX Timeout***.

**NOTE:** The VRP specification says that calls start and call end VRP packets are sent to the recorder to specify when calls start and end. However, not all Tait networks use the call start and end packets. This parameter is relevant only to networks where call start and call end packets are not present.

This parameter defines the period of ‘quiet time’ (absence of RTP packets) during recording which must pass before Total Recall VR stops recording the RTP stream.

7. Select ***Address Type***.

There are two options: MPT 1327 or MPT 1343. Choose the option that matches the addressing scheme that is used on the network.

If you select MPT 1343 then you will be able to specify fleet numbering parameters as well.

8. Select **Apply** to apply the settings.



If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

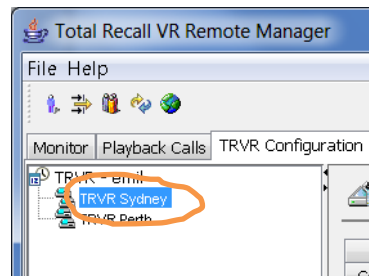
New recordings will start based on the new configuration.


If the network is using MPT 1343 addresses, then you must add fleet addressing parameters to the configuration.

To add fleet addressing parameters:

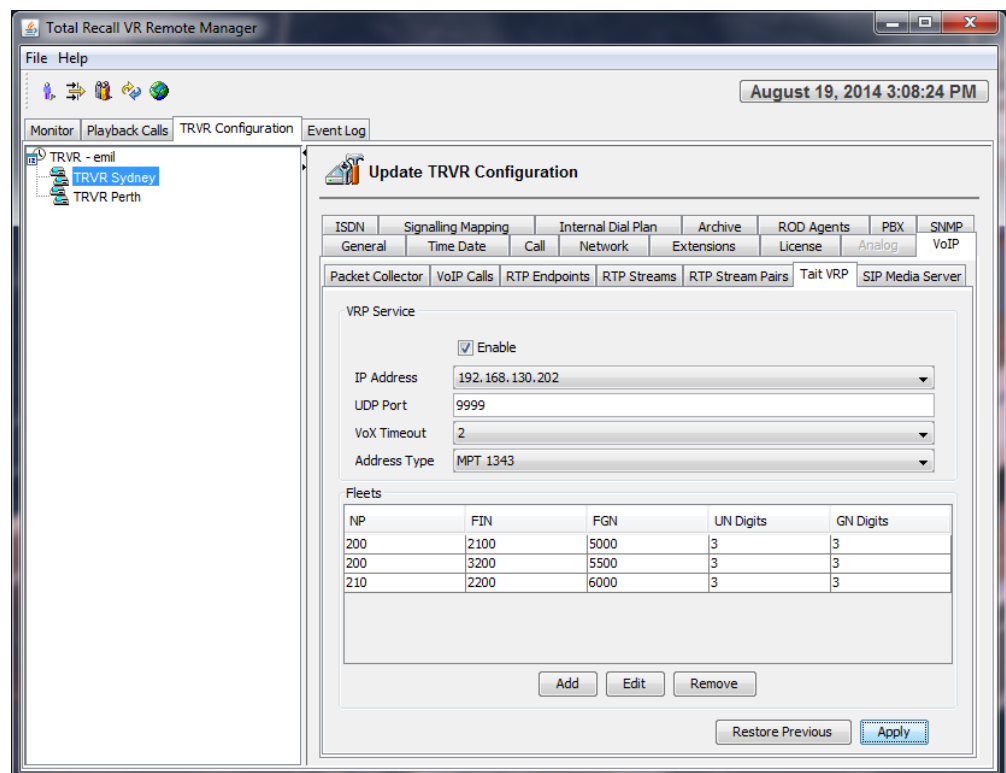
***Add Fleet Addressing Parameters***

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the VoIP tab and then navigate to the Tait VRP tab:

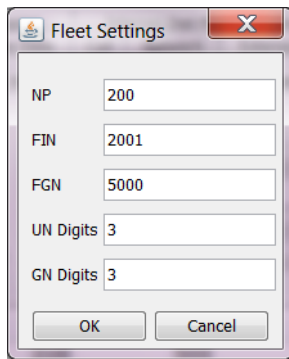


3. Tick **Enable** to enable recording of Tait VRP calls.
4. Select **IP Address**.

This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

We recommend you use the IP address assigned to the LAN 2 interface for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN

5. Select **Add** to display the Fleet Settings dialog:



6. Enter ***NP***.

This is the Number Prefix. Valid values are 200 to 327 inclusive.

7. Enter ***FIN***.

This is the Fleet Individual Number. Valid values are 2001 to 4999 inclusive.

8. Enter ***FGN***.

This is the Fleet Group Number. Valid values are 5000 to 6050 inclusive.

9. Enter ***UN Digits***.

This is the number of digits used for Unit Numbers. Valid values are 2 and 3 (digits).

10. Enter ***GN Digits***.

This is the number of digits used for Group Numbers. Valid values are 2 and 3 (digits).

11. Select **Ok** to return to VRP Settings tab where you must select **Apply** to apply the settings.



If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

New recordings will start based on the new configuration.

To change the configuration for a Fleet simply select the row that contains its settings and select **Edit** which will display the Fleet Settings dialog where you can change the settings.

Finally, to remove a Fleet, simply select the row that contains its settings and select **Remove**.



### 11.3.3.7.SIP Media Server Settings

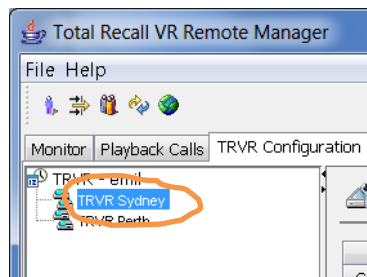
The SIP Media Server provides a recording service on SIP networks. SIP endpoints can use the recording service by simply establishing a SIP session with Total Recall VR.



By default the SIP media server accepts SIP packets on UDP port 5060 on the IP address that is assigned to the LAN 2 interface. In addition it uses UDP port 7000 as the base port for RTP packets. The actual number of UDP ports that it uses to receive RTP packets depends on the number of licensed VoIP recording channels.

To change the configuration of the SIP Media Server:

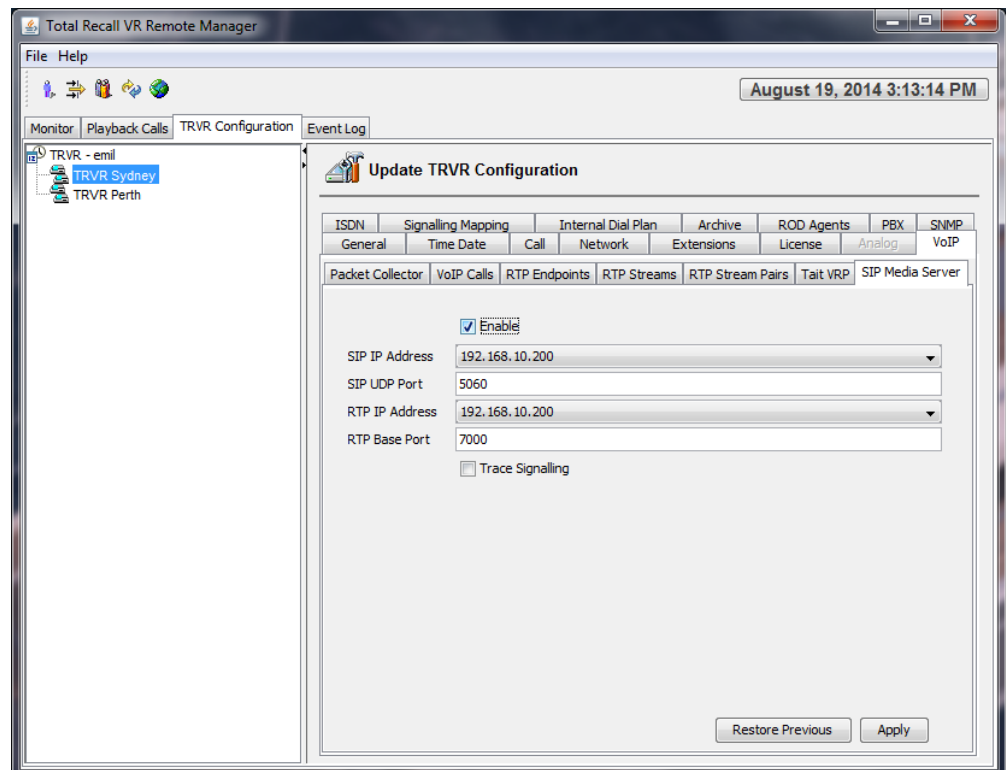
#### Configure the SIP Media Server

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the VoIP tab and then navigate to the SIP Media Server tab:



3. Tick **Enable** to enable the SIP media server.

4. Select **SIP IP Address**.

This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

We recommend you use the IP address assigned to the LAN 2 interface for the SIP service. This leaves LAN 1 for connection to the enterprise LAN.

5. Enter **SIP UDP Port**.

This is the UDP port that Total Recall VR will use to receive SIP packets from other devices on the network.

6. Select **RTP IP Address**.

This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

We recommend you use the IP address assigned to the LAN 2 interface for the RTP services. This leaves LAN 1 for connection to the enterprise LAN.

7. Enter **RTP Base Port**.

This is the starting UDP port that Total Recall VR will use to receive RTP packets from other devices on the network. The actual number of UDP ports that Total Recall VR will use depends on the number of licensed VoIP recording channels.

**RTP Port Range** displays the range of UDP ports that Total Recall VR will use as you change the value of **RTP Base Port**.

8. Optionally, tick **Signalling Tracing**.

If you enable signalling tracing, then Total Recall VR will write all SIP signalling messages that it receives in its logs. You can examine the logs and view the content of the messages with Total Recall VR Remote Manager.

This feature is only intended for troubleshooting. **DO NOT** leave it on during normal operation. It will severely reduce the recording capacity of the system.

9. Select **Apply** to apply the settings.



If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

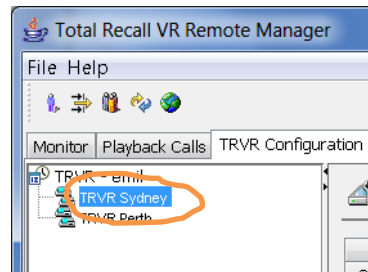
New recordings will start based on the new configuration.



### 11.3.4.Call Settings

This is a group of general recording configuration parameters.

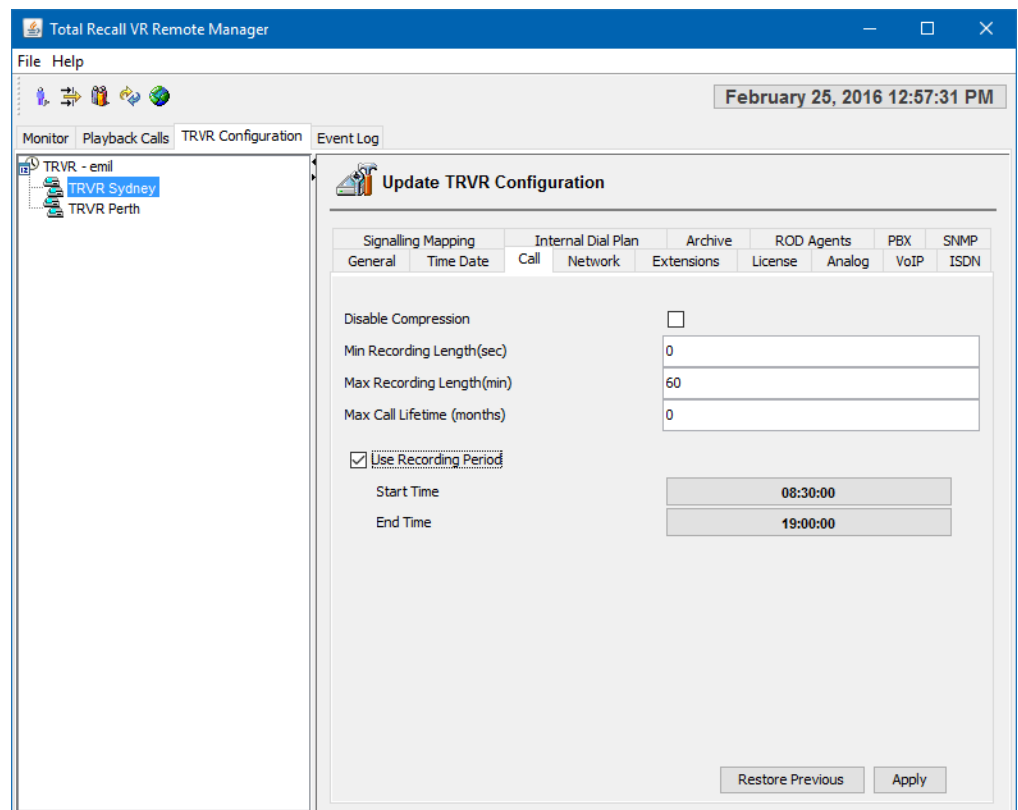
#### *Update Call Settings*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Call tab:



3. Tick ***Disable Compression*** if you wish to disable compression of VoIP and ISDN call recordings.

Total Recall VR automatically compresses recordings of VoIP and ISDN calls to ***SPEEX Q8, 8000Hz, 15Kbps, mono*** format. This flag, if selected, instruct Total Recall VR to keep recordings of VoIP and ISDN calls in the

**G.711 A-law, 8000Hz, 64Kbps, mono** or **G.711  $\mu$ -law, 8000Hz, 64Kbps, mono**.

This setting has no effect on recordings created on analogue recording channels which are automatically compressed to the **HQVQ, 8000Hz, 7.9Kbps, mono** format.

4. Enter **Min. Recording Length**. The value must be less than 20 seconds and it can be 0.

Total Recall VR automatically discards recordings that are shorter than the duration specified by this parameter. A special value, 0 seconds, instructs Total Recall VR to keep all recordings irrespective of their length.

This parameter is useful if you wish to eliminate short phantom recordings which are created by noise on the line when recording analogue sources and using VOX (signal level) as a recording trigger.

5. Select **Max. Recording Length**. The value must be between 1 and 150 minutes (inclusive).

Total Recall VR can create recordings of virtually any duration. However, this creates problems with file sizes. To avoid problems with file sizes, Total Recall VR automatically rolls over recordings to another file when recordings reach the duration specified by this parameter.

Recordings that are rolled over are marked with “(cont)”.

6. Select **Max. Call Lifetime**. The value must be 24 months or less and it can be 0.

Total Recall VR automatically discards (deletes) old recordings when the disk becomes full to free space for new recordings. This ensures continuous operation.

This parameter, when set to value other than 0, tells Total Recall VR the age of recordings that can be safely removed from the system even if the disk is not full.

7. Optionally, tick **Recording Period** if you wish to record only between certain times. Set the start and stop time as well.
8. Select **Apply** to update the configuration of the Total Recall VR.
9. Alternatively, select **Restore Previous** to discard all changes.



If an analogue recording channel has **Trigger** set to a VOX level:

1. The interval between calls must exceed the value of **VOX Timeout**. If a new call starts within the timeout on the same channel, then Total Recall VR assumes it is the continuation of the current recording which is in progress. The audio of both calls will appear in the same recording.

2. If a call is put on hold without music on hold, then recording will terminate after the period specified by *VOX Timeout*. Total Recall VR will start a new recording when the call recommences.

### 11.3.5. Signalling Mapping

Section 2.4.1 Extensions explains the concept of Total Recall VR Extensions. In addition it explains how Total Recall VR uses its configuration to classify identifiers for the source and the destination of recordings as Total Recall VR Extensions.

Signalling mapping configuration plays an important role in the process. Total Recall VR uses this configuration to convert Total Recall VR Raw identifiers to Total Recall VR Mapped identifiers in the process of classifying identifiers as Total Recall VR Extensions.

Signalling Mapping configuration is basically a collection of mapping rules. The mapping rules specify how to convert Raw identifiers to Mapped identifiers. For example, a mapping rule can convert the Raw identifier “sip:ext200@myenterprise.com” to Mapped identifier “Extension 200”.

Each mapping rule has two parameters:

1. Matching expression.
2. Replacement value.

Matching expressions are regular expressions. Total Recall VR compares Raw identifiers to matching expressions and if it finds a match, then it uses the replacement value as a Mapped identifier.



Regular expressions basic syntax reference:  
<http://docs.oracle.com/javase/tutorial/essential/regex/>

For example:

Match Expression	Replacement Value	Raw Identifier	Mapped Identifier
61298762100	100	61298762100	100
61298762101	Tanya's Phone	61298762101	Tanya's Phone
		61298762102	61298762102
61298762([0-9]{3})	Extension \$1	61298762101	Extension 101
		61298762229	Extension 229

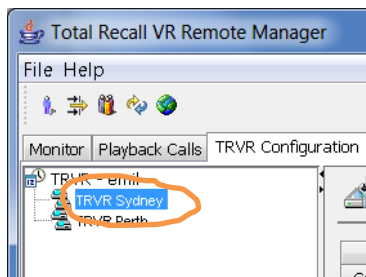
		4456789999	4456789999
sip:ext([0-9]{2})@.*	\$1	sip:ext76@mysip.com	76
		4456789999	4456789999
		sip:90@mysip.com	sip:90@mysip.com
sip:(^[^@]*)@.*	\$1	sip:igor@sipco.com	igor
		sip:90@mysip.com	90
192.168.130.100:700[0-9]	PA Speaker	192.168.130.100:7000	PA Speaker
		192.168.130.100:7008	PA Speaker



If a Raw identifier does not match any of the match expression, then its Mapped value is the same as the Raw value.

To create signalling mapping rules:

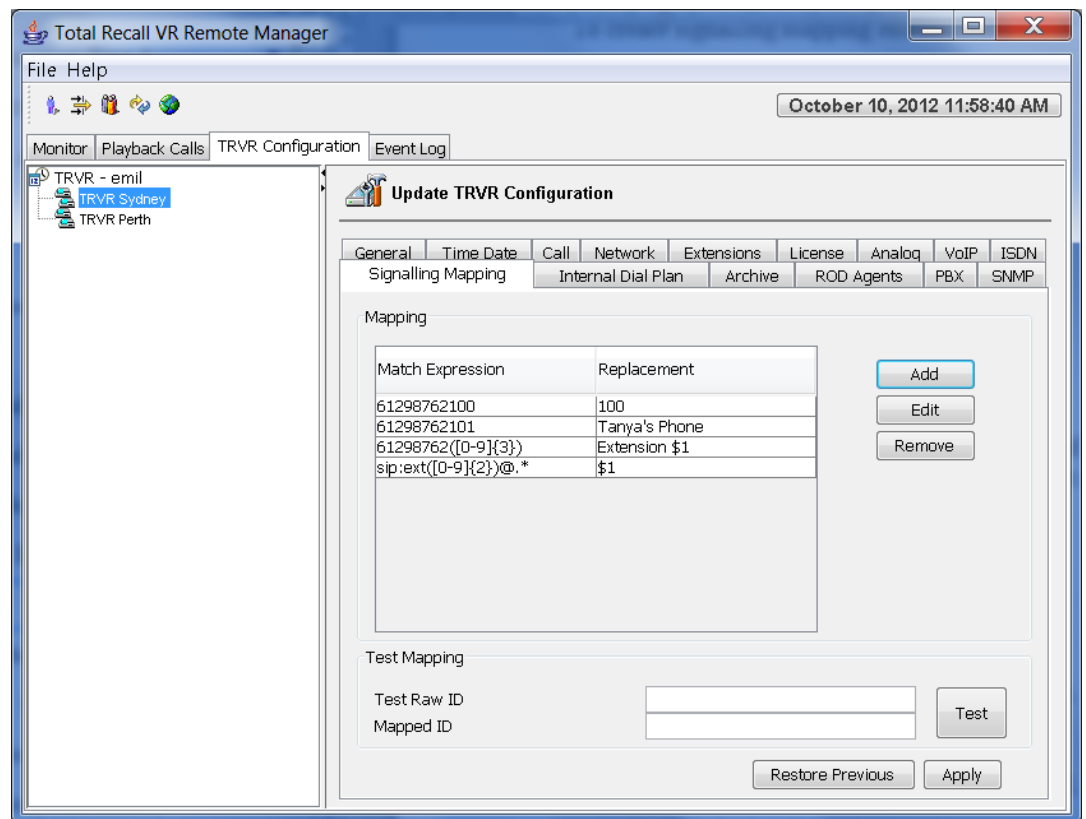
### *Create Signalling Mapping Rules*

1. Select a Total Recall VR:

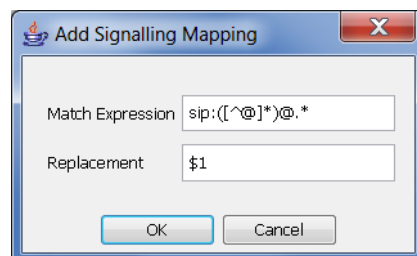


Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Signalling Mapping tab:



3. Select **Add** to display the Signalling Mapping dialog:



4. Enter **Match Expression** and **Replacement** value.
5. Select **OK**. Remote Manager does not actually update the configuration of the Total Recall VR at this stage. It only remembers the new parameters.
6. Optionally test the rule. Enter **Test Raw ID** and then select **Test** to display the Mapped id as determined by Total Recall VR.
7. Repeat steps 3 to 6 to add more mapping rules.
8. Select **Apply** to update the configuration of the Total Recall VR.
9. Alternatively, select **Restore Previous** to discard all changes.

The change is immediate. The rules will apply from the next recording on the system. All recordings in progress will use the old rules.

### 11.3.6. Internal Dial Plan

Section 2.4.1 Extensions explains the concept of Total Recall VR Extensions. In addition it explains how Total Recall VR uses its configuration to classify identifiers for the source and the destination of recordings as Total Recall VR Extensions.

Internal dial plan configuration plays an important role in the process. Total Recall VR attempts to match Mapped identifiers to matching rules that are present in the internal dial plan configuration and if, and only if, it finds a rule that matches a Mapped identifier, then it classifies that identifier as a Total Recall VR Extension.

Internal dial plan configuration is basically a collection of matching expressions which are regular expressions. Total Recall VR compares Mapped identifiers to matching expressions and if it finds a rule that matches a Mapped identifier, then it classifies that identifier as a Total Recall VR Extension.



Regular expressions basic syntax reference:  
<http://docs.oracle.com/javase/tutorial/essential/regex/>

For example:

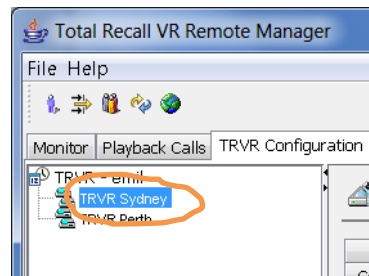
Match Expression	Mapped Identifier	Match?
[0-9]{3}	100	yes
	Extension 101	no
Tanya's Phone	Tanya's Phone	yes
	Any other value	no
Extension [0-9]{3}	Extension 101	yes
	Extension 209	yes
	4456789999	no

To create internal dial plan rules:

#### *Create Internal Dial Plan Rules*

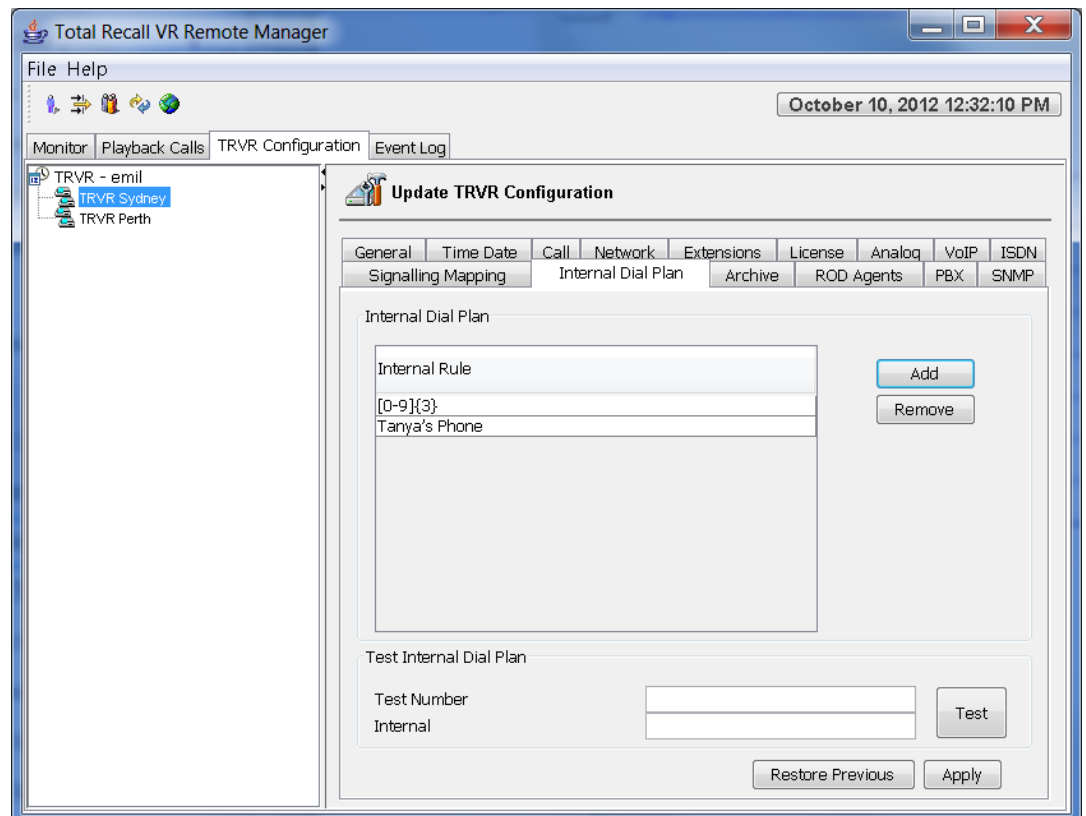
1. Select a Total Recall VR:



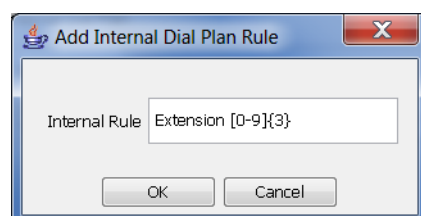


Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Internal Dial Plan tab:



3. Select **Add** to display the Internal Dial Plan Rule dialog:



4. Enter **Internal Rule**.
5. Select **OK**. Remote Manager does not actually update the configuration of the Total Recall VR at this stage. It only remembers the new parameters.
6. Optionally test the rule. Enter **Test Number** and then select **Test** to display the result as determined by Total Recall VR.

7. Repeat steps 3 to 6 to add more mapping rules.
8. Select **Apply** to update the configuration of the Total Recall VR.
9. Alternatively, select **Restore Previous** to discard all changes.

The change is immediate. The rules will apply from the next recording on the system. All recordings in progress will use the old rules.

### 11.3.7. Extension Settings

Recording policies control the operation of the recorder and determine the method of recording.

As section 2.4.2 Recording Policies explains, policies can be one of two types:

- Global – a single system wide policy which applies to recordings from all audio sources and telephone calls on all recording channels.
- Extension – apply only to recordings from audio sources and telephone calls which have been assigned Total Recall VR Extension identifiers. These policies have precedence over the global policy.

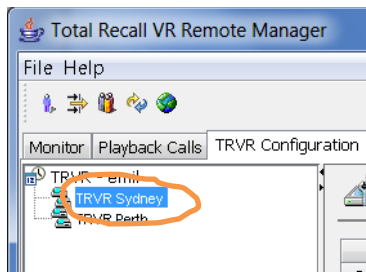
The default global policy is:



- All audio sources and telephone calls are recorded and recordings are kept unless instructed otherwise during recording.
- Real time monitoring of recordings in progress is allowed.
- The use of DTMF key sequences to control recording is disallowed when recording telephone calls.

To change the default global recording policy:

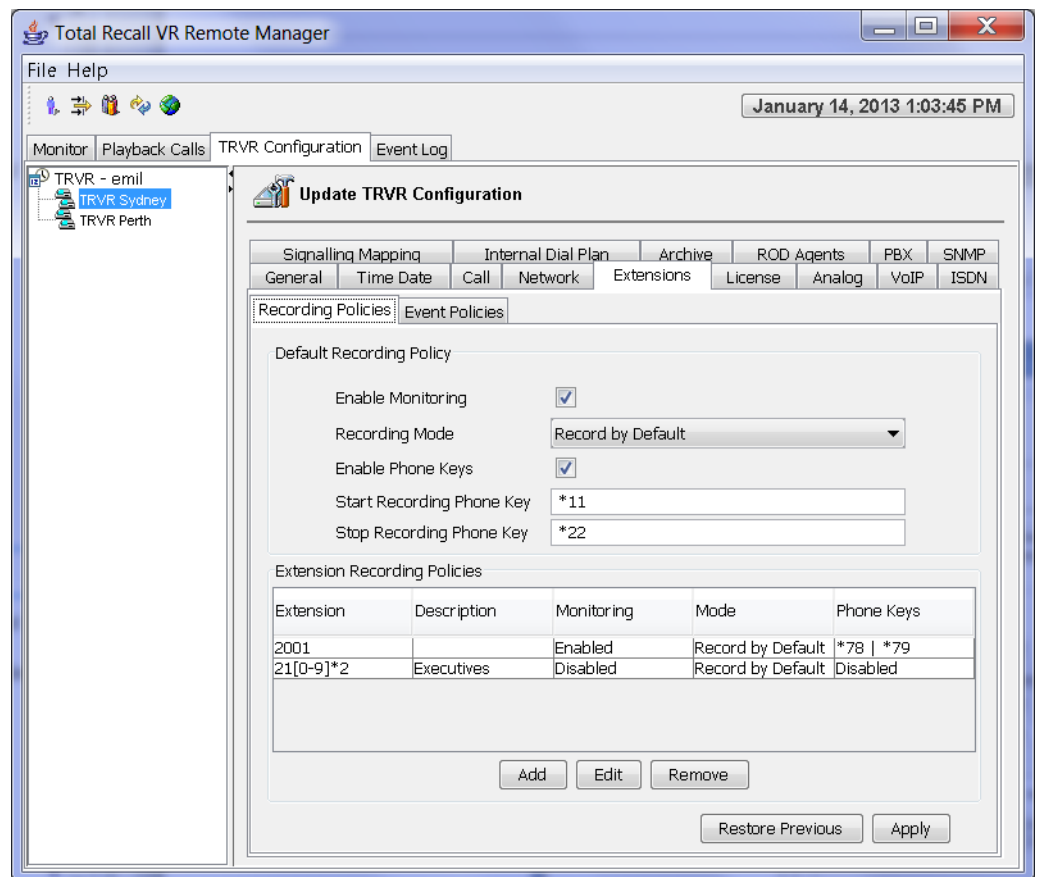
#### *Change the Global Recording Policy*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Extensions tab:



- To enable or disable real-time monitoring of recordings in progress, tick or un-tick **Enable Monitoring**.
- Select **Recording Mode**.

The value of **Recording Mode** determines the method of recording which can be:

- Record by Default:** Total Recall VR will automatically record all audio sources and telephone calls and keep recordings unless instructed otherwise during recording
- Don't Record by Default:** Total Recall VR will automatically record all audio sources and telephone calls, but at the end of the recording it automatically discards recordings unless instructed otherwise during recording.
- Add Notes Only:** Total Recall VR will automatically record all audio sources and telephone calls. Parties on calls cannot use DTMF key sequences to instruct Total Recall VR to discard or keep recordings - recordings are always kept. Same applies to applications which use the Remote Manager Interface to control recording. However, such applications can add notes to recordings in progress.
- Record Partial Calls:** Total Recall VR will record only parts of all audio sources and telephone calls, as instructed during recording, and keep all parts concatenated in a single recording.

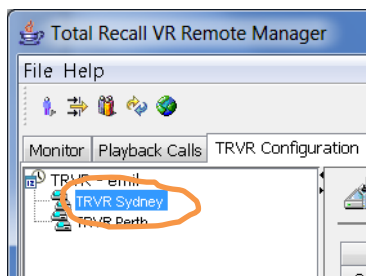
- **Disallowed:** Total Recall VR will automatically record all audio sources and telephone calls. Parties on calls cannot use DTMF key sequences to instruct Total Recall VR to discard or keep recordings - recordings are always kept. Same applies to applications which use the Remote Manager Interface to control recording. In addition, applications cannot add notes to recordings in progress.
5. To enable or disable control of recording via DTMF key sequences, tick or un-tick **Enable Phone Keys**.
  6. If you tick **Enable Phone Keys**, then set:
    - a. **Start Recording Phone Key** to the DTMF key sequence that will start recording. The sequence can be up to 3 digits long.
    - b. **Stop Recording Phone Key** to the DTMF key sequence that will stop recording. The sequence can be up to 3 digits long.
  7. Select **Apply** to update the configuration of the Total Recall VR.
  8. Alternatively, select **Restore Previous** to discard all changes.



The change is immediate. Total Recall VR will start using the new default policy from the next recording. All recordings that are already in progress will not be affected; the previous default policy applies to them.

There are no extension based policies by default. To add a new extension based policy:

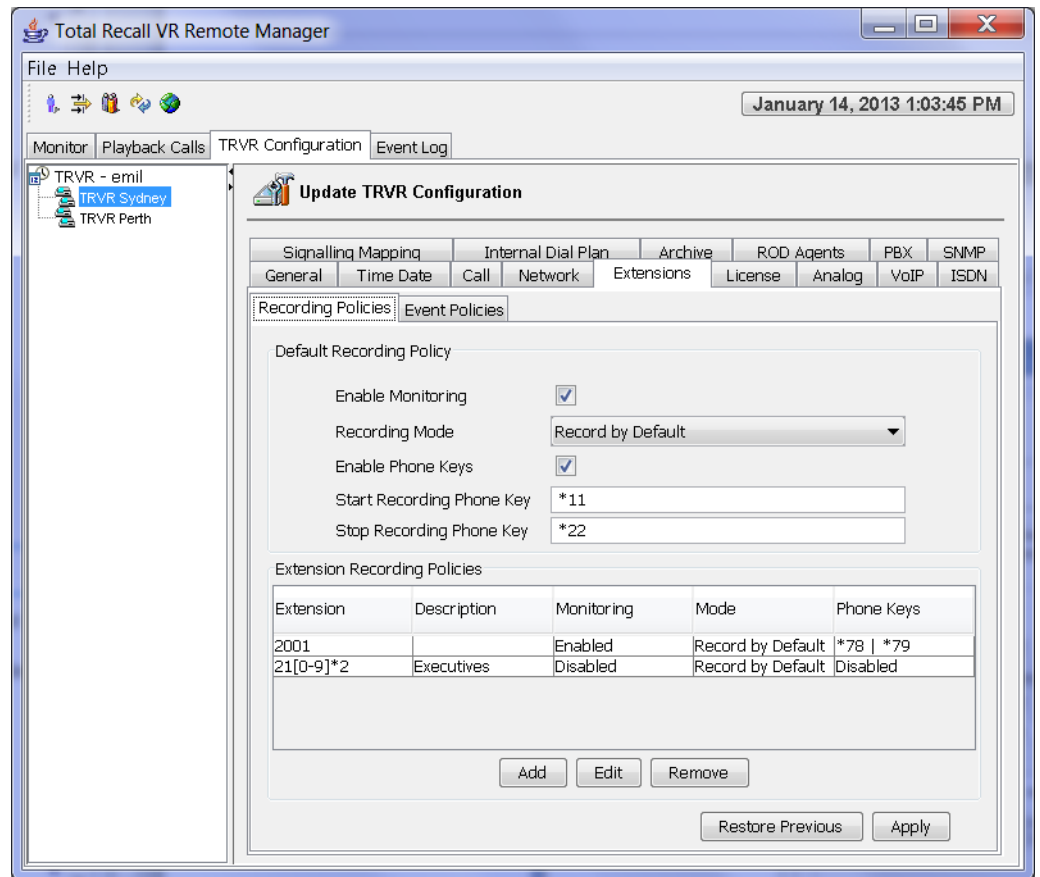
### **Create Extension Based Recording Policy**

1. Select a Total Recall VR:

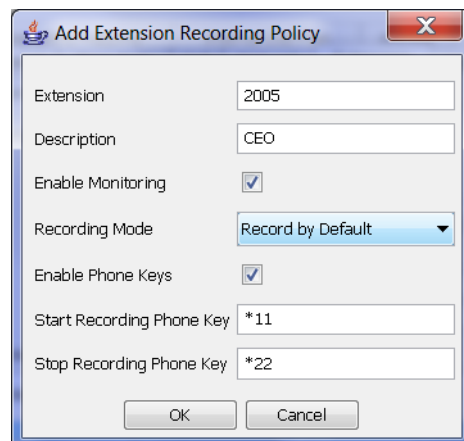


Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Extensions tab:



3. Select **Add** to display the Extension Recording Policy dialog:



4. Enter ***Extension***.

This can be a specific Total Recall VR Extension as determined by Total Recall VR. Section 2.4.1 Extensions describes the process in detail.

Or, it can be a regular expression which matches one or more Total Recall VR Extension as determined by Total Recall VR. For example: 21[0-9]{2} will match extensions 2100 to 2199.

5. Enter ***Description***. This can be any free text that identifies the policy.
6. To enable or disable real-time monitoring of recordings in progress, tick or un-tick ***Enable Monitoring***.

7. Select **Recording Mode**.
8. To enable or disable control of recording via DTMF key sequences, tick or un-tick **Enable Phone Keys**.
9. If you tick **Enable Phone Keys**, then set:
  - a. **Start Recording Phone Key** to the DTMF key sequence that will start recording. The sequence can be up to 3 digits long.
  - b. **Stop Recording Phone Key** to the DTMF key sequence that will stop recording. The sequence can be up to 3 digits long.
10. Select **OK**. Remote Manager does not actually update the configuration of the Total Recall VR at this stage. It only remembers the new parameters.
11. Select **Apply** to update the configuration of the Total Recall VR.
12. Alternatively, select **Restore Previous** to discard all changes.

The change is immediate. Total Recall VR will start using the new extension recording policies from the next recording. All recordings that are already in progress will not be affected; the previous default or extension policies apply to them.

Use **Edit** and **Remove** to change and delete extension policies.

Note that Total Recall VR can assign two Total Recall VR Extensions to a recording; one as an identifier for the source of the recording (the calling party on a call for example) and another as an identifier for the destination of the recording (the called party on a call for example).

Conflicts between extension policies are likely in such cases. Total Recall VR deals with conflicting extension recording policies as follows:

- The settings of the policy with **Recording Mode** set to OTHER THAN 'Record Partial Calls' takes precedence over the settings for the extension policy with **Recording Mode** set to 'Record Partial Calls'.  
  
For example: if extension policy A is set to 'Record by Default' with monitoring disabled, while extension policy B is set to 'Record Partial Calls' with monitoring enabled, then policy A will apply to the recording – everything will be recorded and monitoring will not be allowed.
- If **Recording Mode** is identical, then the policy which allows monitoring takes precedence.  
  
For example: if extension policy A is set to 'Record by Default' with monitoring disabled, while extension policy B is set to 'Record by Default' with monitoring enabled, then policy B will apply to the recording - everything will be recorded and monitoring will be allowed.



If anyone in your organisation specifically does not want any of their calls to be monitored, they must be made aware of how Total Recall

VR deals with conflicting extension recording policies.

## 11.4. Searching

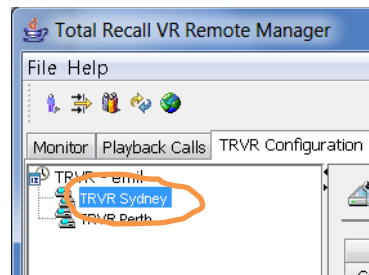
### 11.4.1. Network Share Archive



The Embedded GUI [4] allows users to search for recordings that are stored in archives that are located on a network drive. However, it does not make provisions for the configuration of the location of and access credentials for the network drive.

To configure the location of and access credentials for the network drive which contains a Total Recall VR archive:

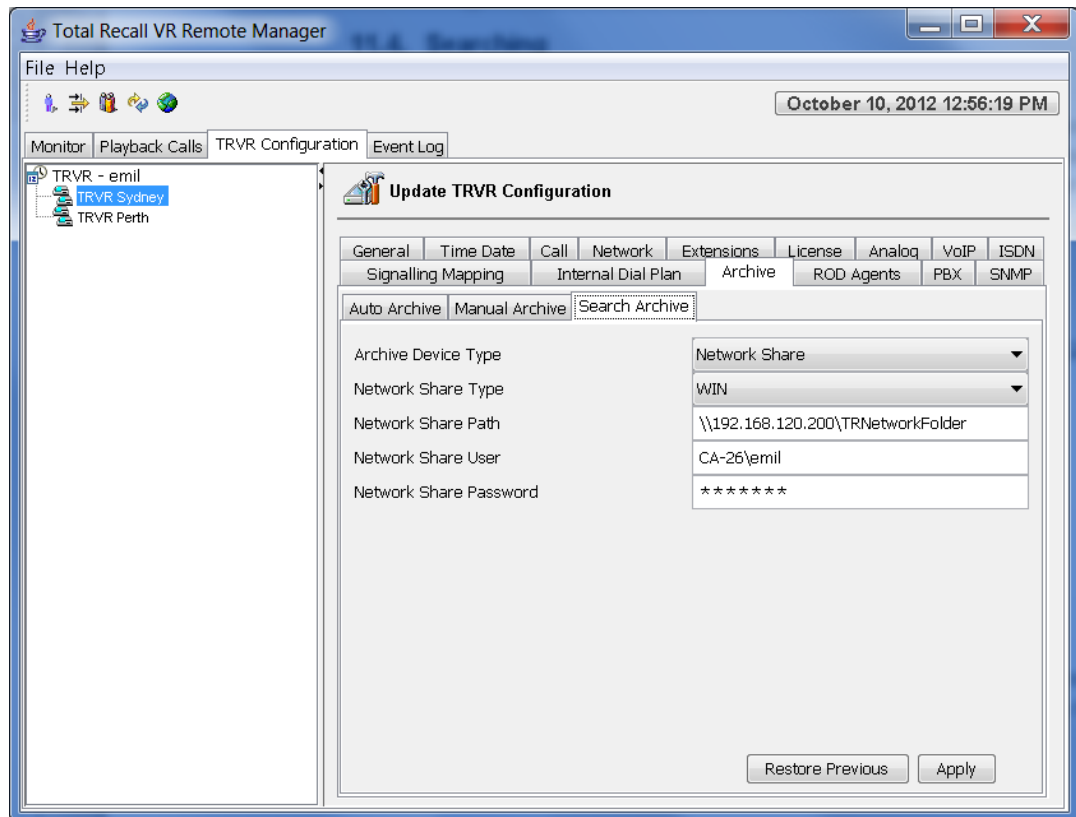
#### *Configure Network Share for Searching via the Embedded GUI*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Archive tab and then select the **Search Archive** tab:



3. Choose Network Share for *Archive Device Type*.
4. Choose *Network Share Type*.
5. Enter *Network Share Path*, the location of the network drive.
6. Enter *Network Share User* and *Network Share Password*, the access credentials for the network drive.
7. Select **Apply** to update the configuration of the Total Recall VR.
8. Alternatively, select **Restore Previous** to discard all changes.

Users of the Embedded GUI can now search archives that are stored on the network drive.

#### 11.4.2. Recent Calls

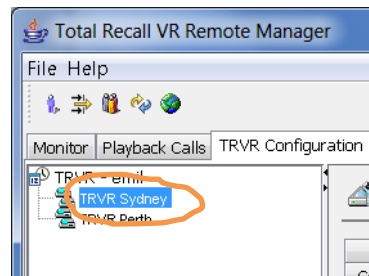
The recent calls parameters define the behaviour of the Search screen of the Embedded GUI when it is in auto-update mode.

By default, the Search screen will update every 15 seconds and it will show the 50 most recent recordings.

#### *Update Recent Calls Parameters*

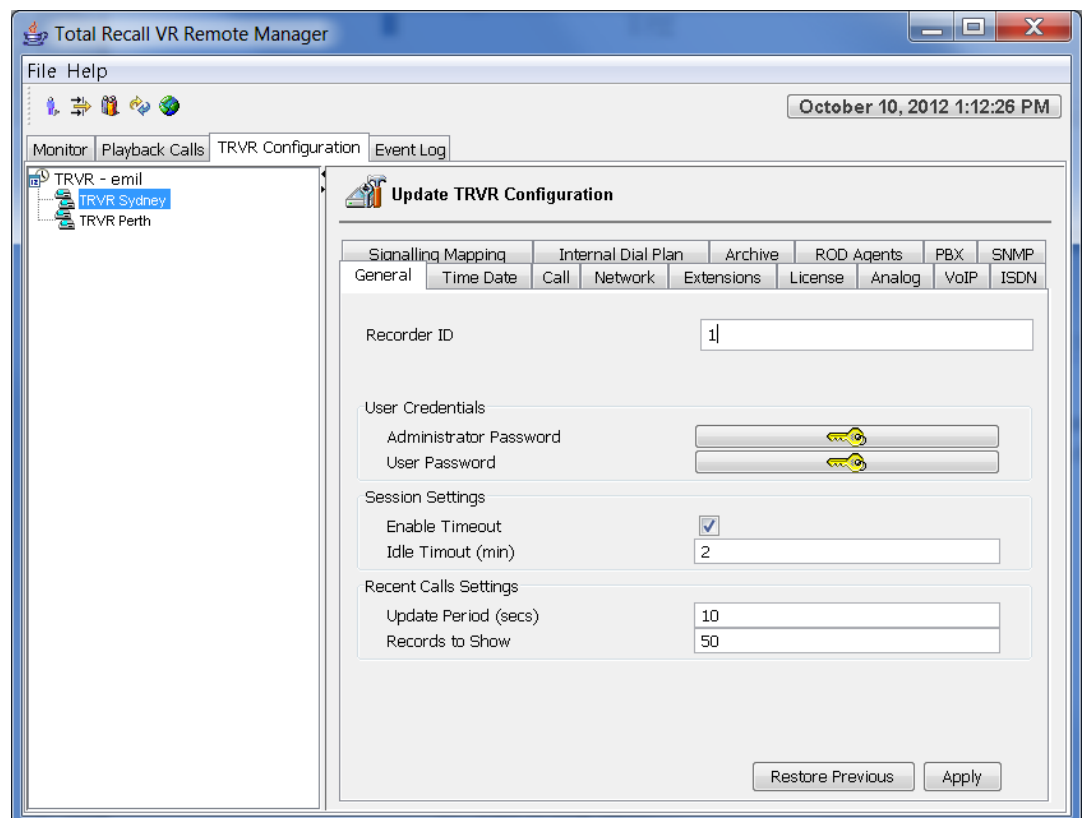
1. Select a Total Recall VR:





Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the General tab:



3. Select **Update Period**. The Search screen will automatically update every number of seconds as specified by this parameter.
4. Enter **Records to Show**. This is the maximum number (up to 999) of recordings that the Search screen will show while it is in auto-update mode.
5. Select **Apply** to update the configuration of the Total Recall VR.
6. Alternatively, select **Restore Previous** to discard all changes.

The new parameters take effect immediately.

## 11.5. Archiving

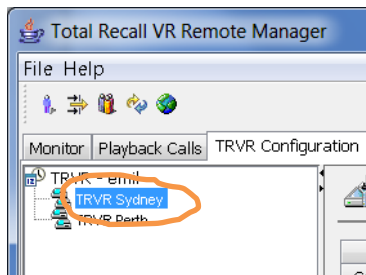
### 11.5.1. On-demand Archiving



The Embedded GUI [4] allows users to archive recordings to archives that are located on a network drive. However, it does not make provisions for the configuration of the location of and access credentials for the network drive.

To configure the location of and access credentials for the network drive which contains a Total Recall VR archive:

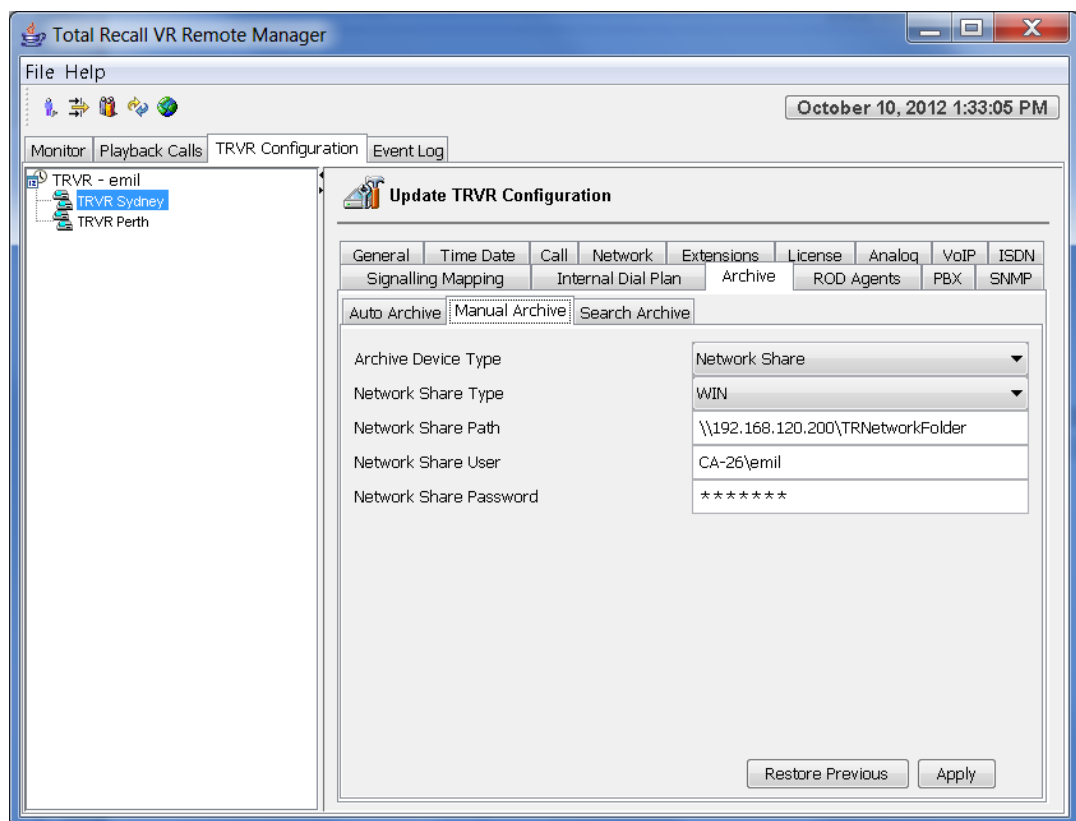
#### *Configure Network Share for Archiving via the Embedded GUI*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Archive tab and then select the Manual Archive tab:



3. Choose Network Share for *Archive Device Type*.

4. Choose *Network Share Type*.
5. Enter *Network Share Path*, the location of the network drive.
6. Enter *Network Share User* and *Network Share Password*, the access credentials for the network drive.
7. Select **Apply** to update the configuration of the Total Recall VR system.
8. Alternatively, select **Restore Previous** to discard all changes.

Users of the Embedded GUI can now archive recordings to archives which are stored on the network drive.

### 11.5.2. Auto Archiving

By default, automatic archiving is disabled.

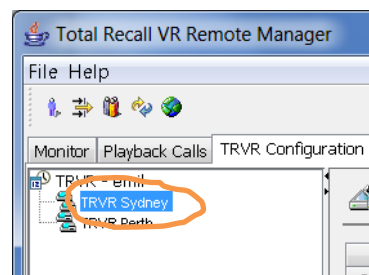
You can change the configuration to:



- Just remind you that it is time to archive when the occupancy of the disks reaches a pre-defined level. In this case the system will display a dialog on the screen and start emitting a “beep” sound at regular intervals to alert you.
- Automatically archive recordings, which have not been archived, at regular intervals.

The two options can be combined.

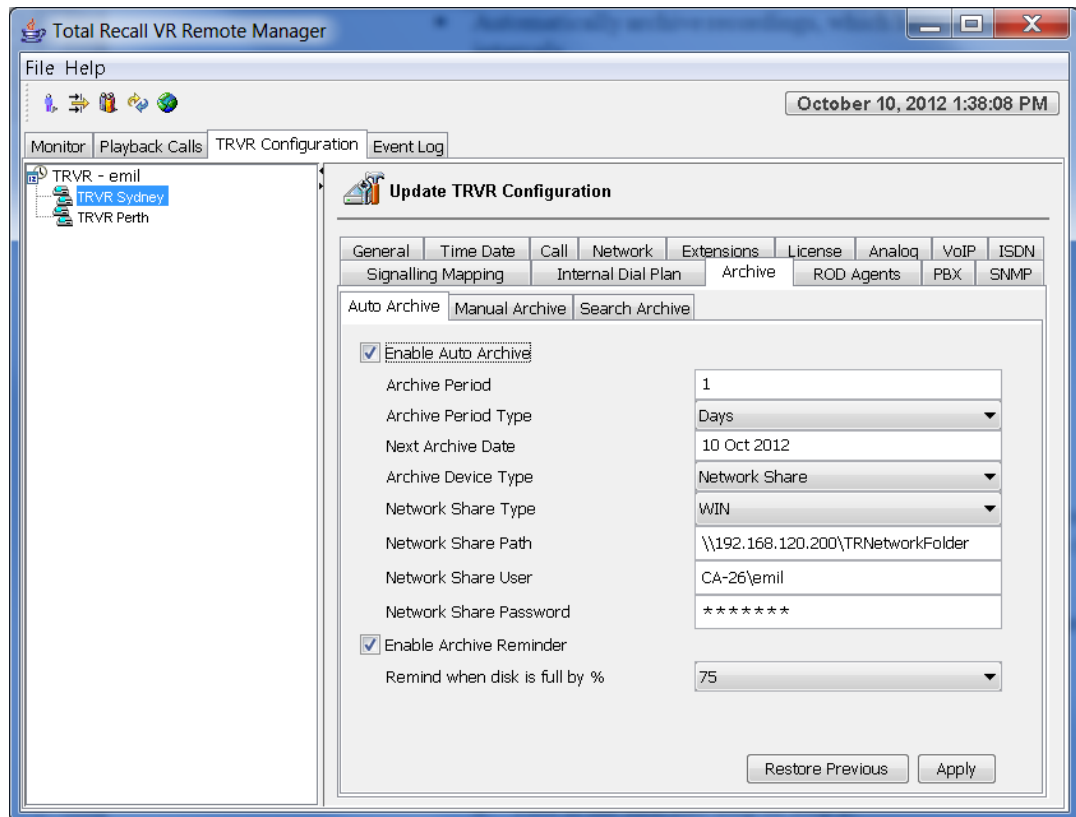
#### *Change Auto Archiving Parameters*

1. Select a Total Recall VR:



Note that you can only select a Total Recall VR if the connection icon is: . If the icon is: , then Remote Manager is not able to connect to the Total Recall VR.

2. Navigate to the Archive tab and then select the Auto Archive tab:



3. Tick **Enable Auto Archive** to enable automatic archiving of recordings on regular intervals.
4. Enter **Archive Period** and choose **Archive Period Type** to define the period at which the Total Recall VR will automatically archive recordings.
5. Choose **Archive Device Type**. Choose:
  - Disc - if you wish to archive to a CD, DVD or BD disc. Then enter a CD-R, CD-RW, DVD+RW, DVD-R<sup>1</sup>, DVD+R<sup>1</sup>, BD-R or BD-RE disc into the drive of the Total Recall VR.
  - USB - if you wish to archive to a USB key or disk drive. Then attach a USB key or disk drive to the Total Recall VR.
  - Network Share – if you wish to archive to a network drive. If you choose this option then enter the details for the network drive.
6. Optionally tick **Enable Archive Reminder**, and select a level, if you wish to enable visual and audible reminder, on the Total Recall VR, to archive when the occupancy of the system disks reaches the specified level.
7. Select **Apply** to update the configuration of the Total Recall VR.
8. Alternatively, select **Restore Previous** to discard all changes.

The change is immediate. The system will enable automatic archiving and perform the first archive automatically at the anniversary of the first period.

<sup>1</sup> Requires application release 10.9.0 or better on the Total Recall VR system.

## 11.6. RoD Agents



See the Total Recall VR RoD Client user guide [6].

## 11.7. SNMP Agent



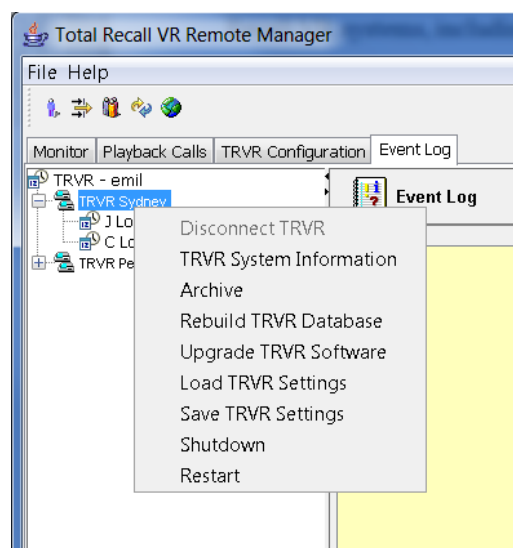
See the Total Recall VR SNMP Agent user guide [7].

## 12. Total Recall VR System Management

Remote Manager makes provisions for basic remote monitoring and management of Total Recall VR systems, including:

1. View operational logs.
2. View system information.
3. Remote on-demand archiving.
4. Remote application upgrade.
5. Remote backup and restore or system configuration.
6. Remote rebuild of the database.
7. Remote system restart and shutdown.

Users can access all of the above from the Event Log tab and the Total Recall VR connection context menu.






*Figure 13: Total Recall VR Connection Context Menu*

### 12.1. System Logs

Remote Manager can load and display the most recent 1000 entries in the operating logs of Total Recall VR systems. This is useful when diagnosing problems with Total Recall VR systems.

The logs may contain 3 different types of events:

- Information  events are standard system events and do not require any further action.
- Warnings  are events that may indicate possible future problems, and should be investigated – for example, failed database searches and power failures.

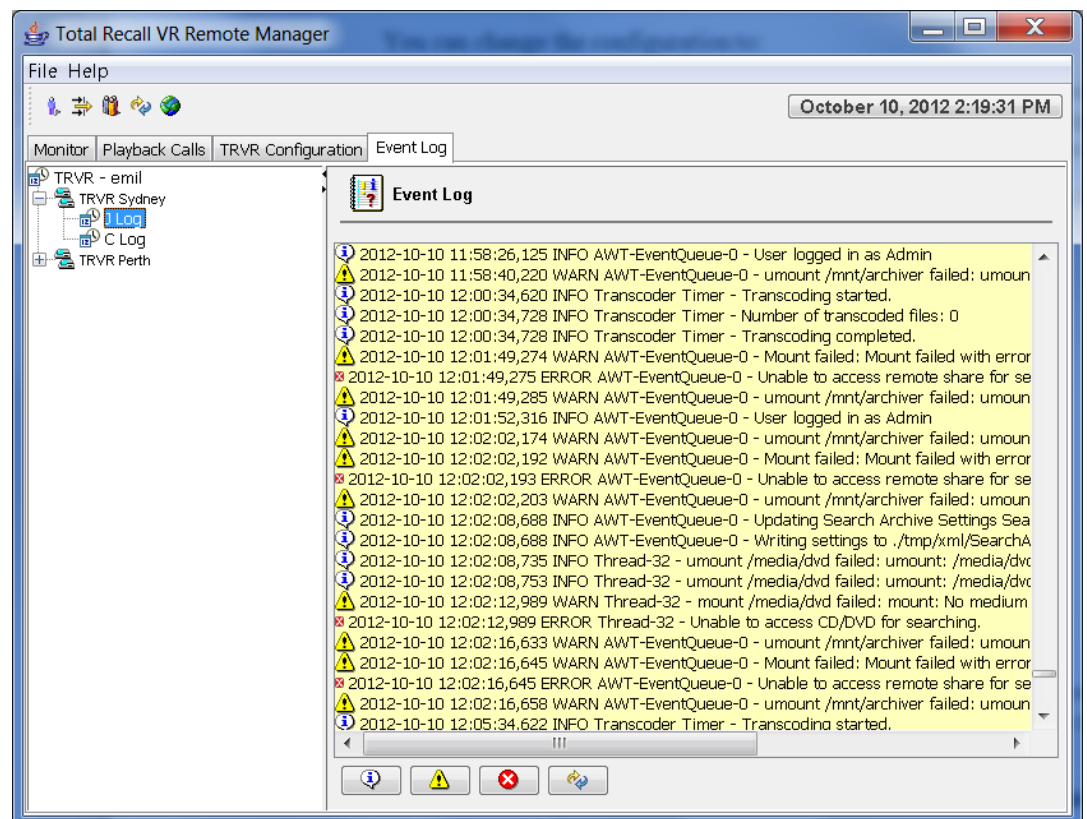
- Errors  are events that must be investigated immediately, such as database rebuild failures, auto-archive failures, and hardware issues.





In addition to providing an activity log for system administration, the logs provide an audit trail of user activity that can be referred to in the event of security issues.

To view the most recent 1000 entries in the logs of a Total Recall VR system first navigate to the Event Log tab and then:

### View System Logs

1. Double click on a Total Recall VR to expand the log nodes:



2. Select **J Log** or **C Log** and Remote Manager will load the most recent 1000 entries that are in the log.
3. Select  to load the most recent 1000 entries.
4. Select ,  or  to show/hide information, warning and error events respectively.

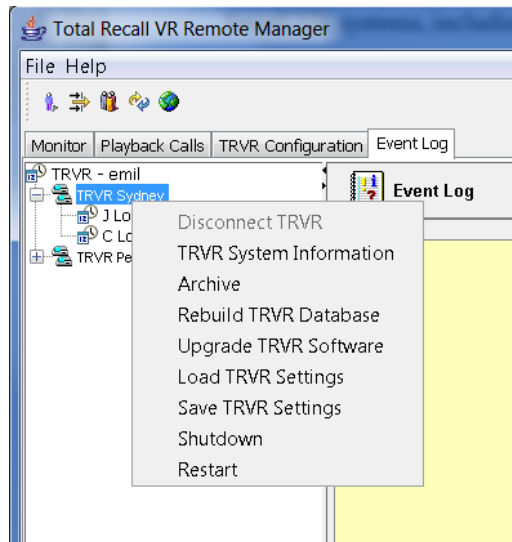
## 12.2. System Information

Remote Manager can access and display a summary of useful system information such as the version of the application, recording channel configuration and disk space occupancy.

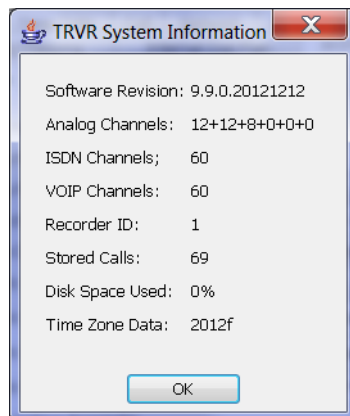
To view system information for a connected Total Recall VR:

### Procedure Title

1. Display the context menu:



2. Select **TRVR System Information** to display the System Information dialog:



3. The dialog displays:

- **Software Revision** - the current version of the Total Recall VR application.
- **Analog Channels** - the analogue recording channel count and configuration.
- **ISDN Channels** – the ISDN recording channel count.
- **VoIP Channels** – the VoIP recording channel count.
- **Recorder ID** - the current ID of the system.
- **Stored Calls** - the total number of recordings that are stored on the system disks.
- **Disk Space Used** – system disk occupancy, in percent.



- **Time Zone Data** – the version of the time zone data file that is currently on the system.
4. Select **OK** to dispose of the dialog.

### 12.3. Remote Archiving

Remote Manager can trigger on-demand archiving on Total Recall VR systems. The Total Recall VR Embedded GUI User Guide [5] explains on-demand archiving in detail.

If you plan to archive remotely, then make sure to either:

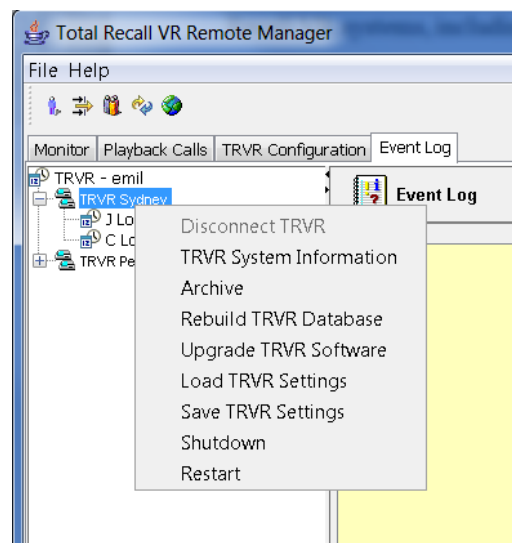


- Load a CD, DVD or BD disc in the disc drive of the Total Recall system; or
- Attach a USB key or disk drive to the system; or
- Configure a network archive as explained in section 11.5.1 On-demand Archiving.

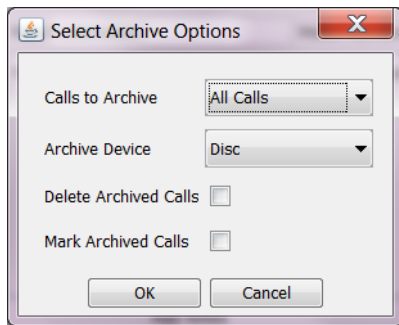
To start an on-demand archive session on a Total Recall VR from Remote Manager:

#### **Remote Archiving**

1. Display the context menu:



2. Select **Archive** to display the Archive Options dialog:



3. Choose ***Calls to Archive***. Choose:
  - *All Calls* – to archive all recordings that exist on the system.
  - *Found Calls* – to archive all recordings that were identified by the last search. Use the Playback tab to define a search criterion and perform a search first if you intend to use this option.
  - *Unarchived Calls* – to archive all recordings that have not been archived to date.
  - *Tagged Calls* – to archive all recordings that are tagged. You must use the Embedded GUI to tag recordings.
4. Choose ***Archive Device***. Choose:
  - *Disc* - if you wish to archive to a CD, DVD or BD disc. A CD-R, CD-RW, DVD+RW, DVD-R<sup>2</sup>, DVD+R<sup>1</sup>, BD-R or BD-RE disc should be in the disc drive of the Total Recall VR.
  - *USB* - if you wish to archive to a USB key or disk drive. A USB key or disk drive should be attached to the system.
  - *Network Share* – if you wish to archive to a network drive. See section 11.5.1 On-demand Archiving for information on how to configure the network share.
5. Optionally, tick ***Delete Archived Calls*** to archive and then delete the archived recordings. By default, Total Recall VR does not delete the recordings after archiving them.

Note that this option is available only if you are logged in as a user with administrative rights.
6. Optionally, tick ***Mark Archived Calls*** to mark recordings as archived which will exclude the recordings from subsequent auto-archive sessions.

Note that this option is available only if you are logged in as a user with administrative rights.
7. Select **OK** to start archiving.

---

<sup>2</sup> Requires application release 10.9.0 or better on the Total Recall VR system.

Unlike the Embedded GUI, Remote Manager does not show progress of the archiving operation at this stage.



If you are archiving to disc, and if multiple discs are needed to complete the full archive, then this utility will create the first disc only and end the archive at that point.

#### 12.4. Remote Application Upgrade

Remote Manager can upload and install an updated version of the Total Recall VR application to Total Recall VR systems.



Upgrades affect operating system and application files only.

However, it is strongly recommended that you archive all recordings before attempting an upgrade.

We release regular updates of the Total Recall VR application to add new features and correct problems with existing features. In addition, we update time zone definition files with every software update. This ensures that Total Recall VR has the correct dates for day-light saving changes for various time zones around the world.

To upgrade the application on a Total Recall VR you must first obtain, or create, an upgrade disc with the new version of the application.



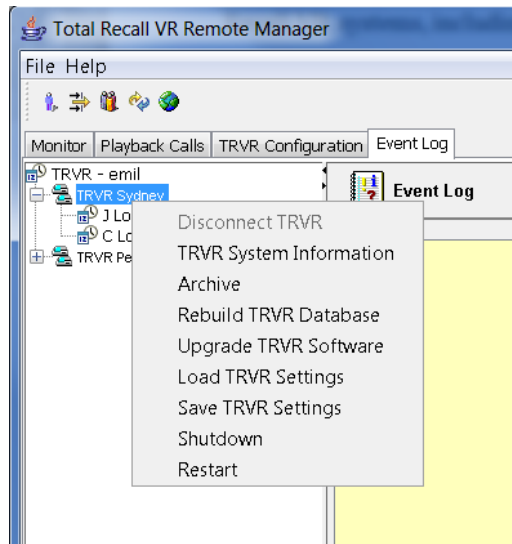
You can download images (ISO files) for upgrade discs from our web site. Go to <http://www.totalrecallvr.com/downloads>.

Once you have the disc, to upgrade the application:

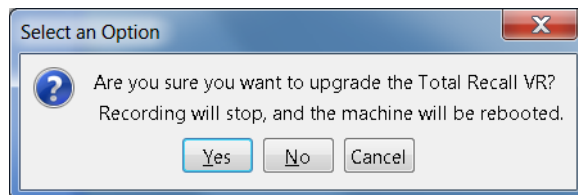
##### *Upgrade Application*

1. Insert the Total Recall VR application upgrade disc into the DVD drive of the PC that is running Remote Manager.

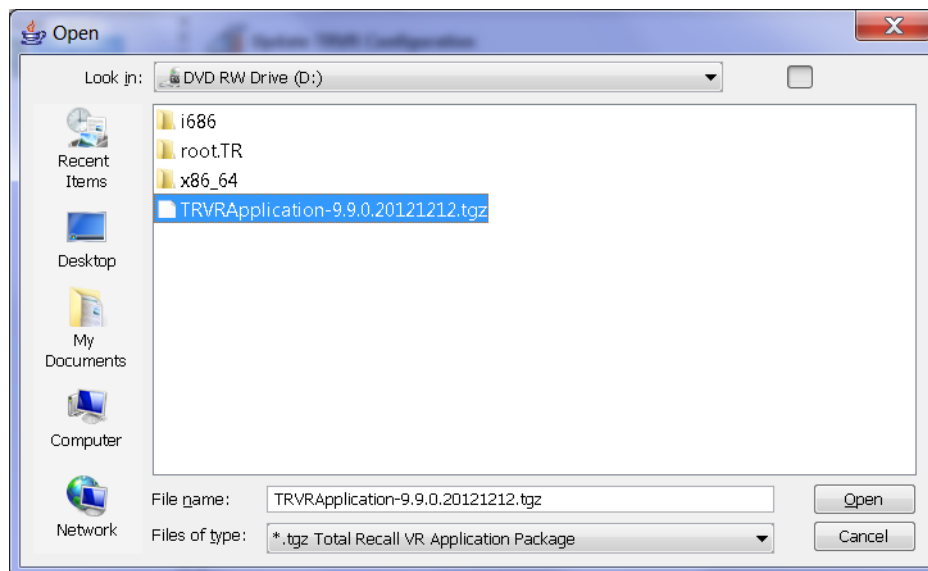
2. Display the context menu:



3. Select **Upgrade TRVR Software** to start the process. Remote Manager will display a warning dialog:



4. Select **Yes** to display the file chooser dialog:



5. Select the Total Recall VR application package (.tgz file) which is located on the upgrade disc.
6. Select **Open** to upgrade the Total Recall VR system.

Remote Manager will transfer the upgrade package to the Total Recall VR system, install it and restart the system. The system will be running the new application version when it starts.

## 12.5. Backup & Restore Settings



DO NOT restore application configuration from one Total Recall VR to another.

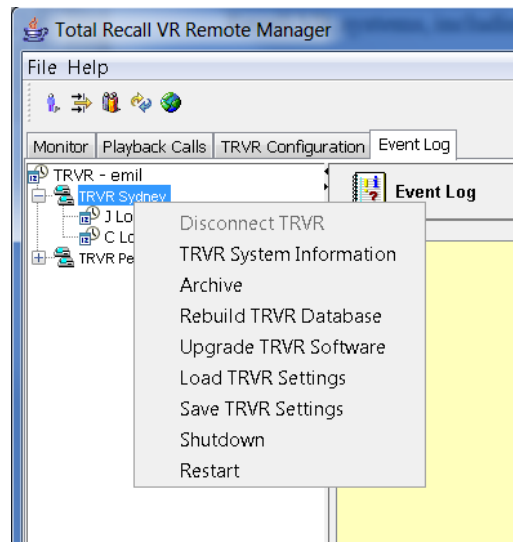
A backup of the Total Recall VR configuration should be kept in a safe place at all times. It can be used to restore the Total Recall VR application configuration to a known state if it is “corrupted” in any way.

Remote Manager can create a backup file with configuration of a Total Recall VR. In addition, it can restore the configuration to a Total Recall VR from a backup file that it creates.

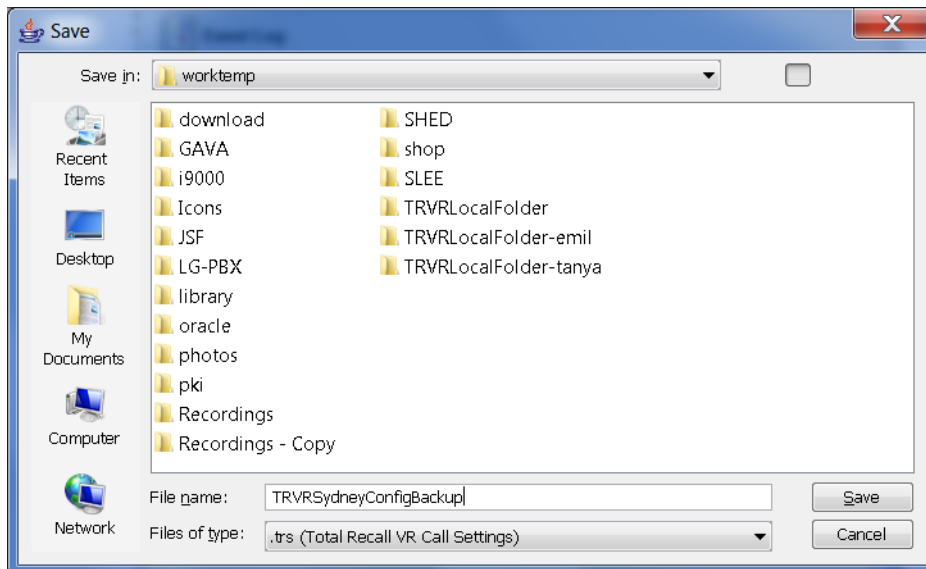
To create a backup of the application configuration of a Total Recall VR:

### *Backup Application Configuration*

1. Display the context menu:



2. Select **Save TRVR Settings** to display the file chooser dialog:



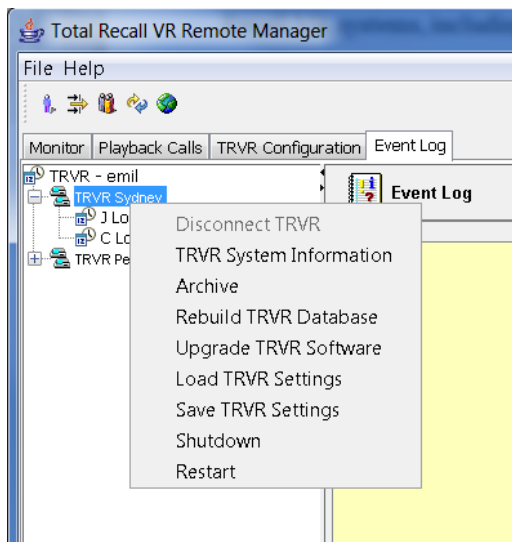
3. Select a directory where you wish to place the backup file and enter **File Name** for the backup file.
4. Select **Save** to create the backup file.

Remote Manager will transfer the application configuration from the Total Recall VR and store it all in the backup file.

When you must restore the application configuration from the backup file:

### ***Restore Application Configuration***

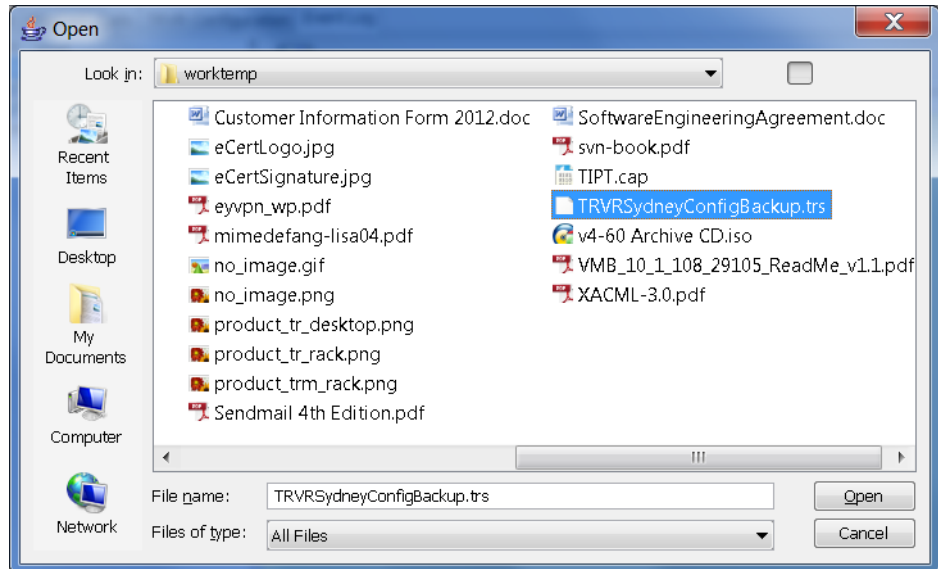
1. Display the context menu:



2. Select **Load TRVR Settings** to start the process. Remote Manager will warn you that you must restart the Total Recall VR after restoring the settings.



3. Select **OK** to display the file chooser dialog:



4. Select a file (.trs) that contains a backup of application configuration for the Total Recall VR.
5. Select **Open** to restore the configuration.

Remote Manager will upload the backup file to the Total Recall VR and restore the configuration. You must restart the Total Recall VR so that the restored configuration takes effect.

## 12.6. Database Rebuild

Database rebuild is a process which Total Recall VR uses to reconstruct the database of additional information about recordings from information stored in the recording files. This may be necessary when the database is damaged.



The process may take few hours to complete if there are a large number of recordings on the system.



Total Recall VR DOES NOT record while rebuilding the database.



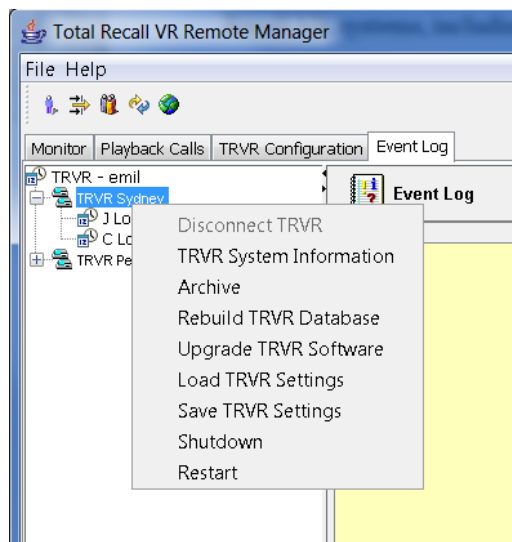
DO NOT interrupt the rebuilding of the database. Doing so may result in an irreversible damage to the database and recordings.

Total Recall VR automatically rebuilds its database when it starts after what is known as a “dirty shutdown”.

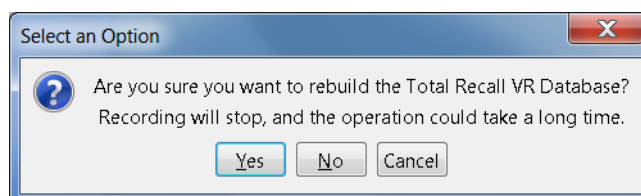
However, it is possible to trigger the process manually from Remote Manager as well:

### *Rebuild the Database*

1. Display the context menu:

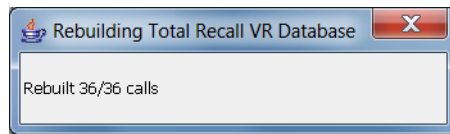


2. Select **Rebuild TRVR Database** to start the process. Remote Manager will display a warning that all recording will stop:

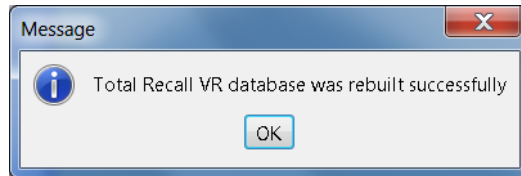


3. Select **Yes** to rebuild the database. Remote Manager will show the progress of the operation:





4. Eventually, it will show a dialog about the final status of the operation:



5. Select **OK** to dispose of the dialog.

The rebuild process checks the integrity of the recording files as well. Files that can be read but fail the integrity check are marked as “damaged”. Damaged recordings show with the “X” flag on the Search screen. Files that cannot be read at all will be removed (deleted) during the rebuild process.

## 12.7. Remote System Restart & Shutdown

Remote Manager makes provisions for remote shutdown and restart of Total Recall VR systems. To do so, use the corresponding options provided on the context menu that is associated with Total Recall VR connections.



If you shut down a LinX Altus or Neos, then you need to manually turn power off using the power key provided with the system.

All other models automatically power down.

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## 14. Glossary

Our guides use certain terms and abbreviations.

### 14.1.1. Terms

#### Extensions

Extensions are a Total Recall VR concept that helps identify the source and the destination of recordings. Extensions can be numbers or any free format text. For example calling and called numbers can be classified as extensions if they match an entry in the Internal Dial Plan.

#### Extension Mapping

Extension mapping is a process used by the Total Recall VR to convert raw identifies of sources and destinations of recordings to user friendly identifiers. For example, when recording VoIP calls the 'From' and 'To' identifiers may be rather cryptic, say 'ext122@sip.myenterprise.com'. The extension mapping process can convert this identifier to '122' or 'Extension 122'.

#### Internal Dial Plan

Internal Dial Plan is Total Recall VR configuration which helps it determine which extensions are internal to the enterprise.

#### Recording Channel

Total Recall VR uses recording channels to capture audio on analogue, VoIP or ISDN sources. The number of recording channels can be different to the number source channels. For example, a Total Recall VR can have 20 ISDN channels while connected to an ISDN PRI link which has 30 B channels.

#### Remote Manager

A powerful Java™ based client application for Total Recall VR systems. It installs on Windows™ PCs and can be used to securely configure and manage multiple Total Recall VR systems over a TCP/IP network. In addition, it can be used to monitor recordings in progress in real time as well as search for and then play past recordings.

#### RoD Client

A small Java™ based taskbar application for Total Recall VR systems. It installs on Windows™ PCs and allows users to control in real-time which calls are recorded. In addition, enables users to add notes to recordings of calls while calls are being recorded.

#### Supervisor Client

A small Java™ based client application for Total Recall VR systems, It installs on Windows™ PCs and allows users to manually control (start, stop, ...) recording on analogue channels. In addition, it can be used to monitor recordings in progress in real time as well as add notes to recordings in progress.

#### Total Recall VR

The system that is the subject of this manual.

### 14.1.2. Abbreviations



Most definitions courtesy of “[Wikipedia, the free encyclopaedia](#)”.

#### **CLI: Calling Line Identification**

A telephony intelligent network service that transmits the caller's telephone number and in some places the caller's name to the called party's telephone equipment during the ringing signal or when the call is being set up but before the call is answered.

#### **D/A: Digital to Analogue**

A digital-to-analogue converter (DAC or D-to-A) is a device for converting a digital (usually binary) code to an analogue signal (current, voltage or electric charge).

#### **DSP: Digital Signal Processor**

A specialized microprocessor designed specifically for digital signal processing, generally in real-time computing.

#### **DTMF: Dual-Tone Multi-Frequency**

Used for telephone signalling over the line in the voice-frequency band to the call switching centre. The version of DTMF used for telephone tone dialling is known by the trademarked term Touch-Tone, and is standardised by ITU-T Recommendation Q.23. Other multi-frequency systems are used for signalling internal to the telephone network.

#### **IP: Internet Protocol**

A data-oriented protocol used for communicating data across a packet-switched internetwork.

IP is a network layer protocol in the internet protocol suite and is encapsulated in a data link layer protocol (e.g., Ethernet). As a lower layer protocol, IP provides the service of communicable unique global addressing amongst computers.

#### **ISDN: Integrated Services Digital Network**

A circuit-switched telephone network system, designed to allow digital transmission of voice and data over ordinary telephone copper wires, resulting in better quality and higher speeds than that available with the PSTN system.

#### **LAN: Local Area Network**

A computer network covering a small geographic area, like a home, office, or group of buildings.



**NTP: Network Time Protocol**

A protocol for synchronizing the clocks of computer systems over packet-switched, variable-latency data networks. NTP uses UDP port 123 as its transport layer. It is designed particularly to resist the effects of variable latency (Jitter).

**PBX: Private Branch Exchange**

Also called Private Business eXchange, or PABX (Private Automatic Branch eXchange), a PBX is a telephone exchange that serves a particular business or office, as opposed to one a common carrier or telephone company operates for many businesses or for the general public.

**RTP: Real-time Transport Protocol**

The Real-time Transport Protocol (or RTP) defines a standardized packet format for delivering audio and video over the Internet.

**SMDR: Station Message Detail Record**

SMDR is a record containing information about recent system usage, including the identities of sources (points of origin), the identities of destinations (endpoints), and the duration of each call.

**SIP: Session Initiation Protocol**

An application-layer control (signalling) protocol for creating, modifying, and terminating sessions with one or more participants. These sessions include Internet telephone calls, multimedia distribution, and multimedia conferences.

**TCP: Transmission Control Protocol**

One of the core protocols of the Internet protocol suite, often simply referred to as TCP/IP. Using TCP, applications on networked hosts can create connections to one another, over which they can exchange streams of data using Stream Sockets.

**TRVR: Total Recall VR**

A professional voice logging and call recording system.

**UDP: User Datagram Protocol**

UDP is one of the core protocols of the Internet protocol suite. Using UDP, programs on networked computers can send short messages sometimes known as datagrams (using Datagram Sockets) to one another. UDP is sometimes called the Universal Datagram Protocol.

**VLAN: Virtual LAN**

A method of creating independent logical networks within a physical network.

**VoIP: Voice over Internet Protocol**

Also called IP Telephony, Internet telephony, Broadband telephony, Broadband Phone and Voice over Broadband, VoIP is the routing of voice conversations over the Internet or through any other IP-based network.



**VOX: Voice Operated Switch**

A switch that operates when sound over a certain threshold is detected.

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